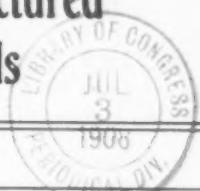


# Rock Products

DEVOTED TO  
Concrete and Manufactured  
Building Materials



Vol. VII.

CHICAGO, ILL., JUNE 22, 1908.

No. 12.

## CAROLINA PORTLAND CEMENT COMPANY

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Manufacturers of the Celebrated



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CAPACITY, 60,000 PER DAY.  
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FOR TUBE MILLS  
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## ALMA Portland Cement

STANDARD BRAND  
OF  
MIDDLE WEST.

Specially adapted to all Reinforced Concrete and High-Class Work.

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Growth of Concrete Construction in the South.  
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 and C. R. I. & P. R. R., by Switch.

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IS IDEAL FOR

**Waterproofing Concrete Blocks**

SAVES MONEY. TRY IT.

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 Sole Manufacturers.

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# Rock Products

DEVOTED TO  
Concrete and Manufactured  
Building Materials

Volume VII.

CHICAGO, ILL., JUNE 22, 1908.

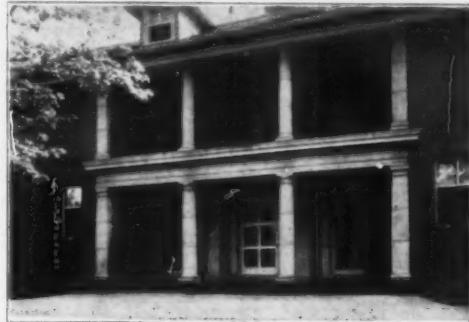
Number 12.

## HIGH-CLASS MODERN RESIDENCE.

Adaptability of Concrete to the Best Forms of Artistic Expression.

THE artistic possibilities and the many other advantages of concrete for residence construction are being recognized more and more by the progressive architects of Chicago, and cement is rapidly taking the place where it rightfully belongs. Until the last few years concrete received only sporadic recognition from architects for its value as a medium through which to express ideas of beauty as well as utility. But for this the profession is not to be blamed. Conservatism is a commendable trait, and those who have been the most conservative in adopting the new material are gradually coming to be its most enthusiastic advocates. Then, too, many atrocities, perpetrated by builders who lacked artistic sense and training, have prejudiced the profession and the public against the plastic possibilities of what is undoubtedly the best medium of architectural expression today for residential architecture.

In the May 22 number of ROCK PRODUCTS was printed an engraving from the architect's perspective drawing of a winter residence now being erected for a prominent citizen of Chicago at Altadena, Cal. This was designed by W. Carbys Zimmerman, an architect who early saw the possibilities of concrete construc-



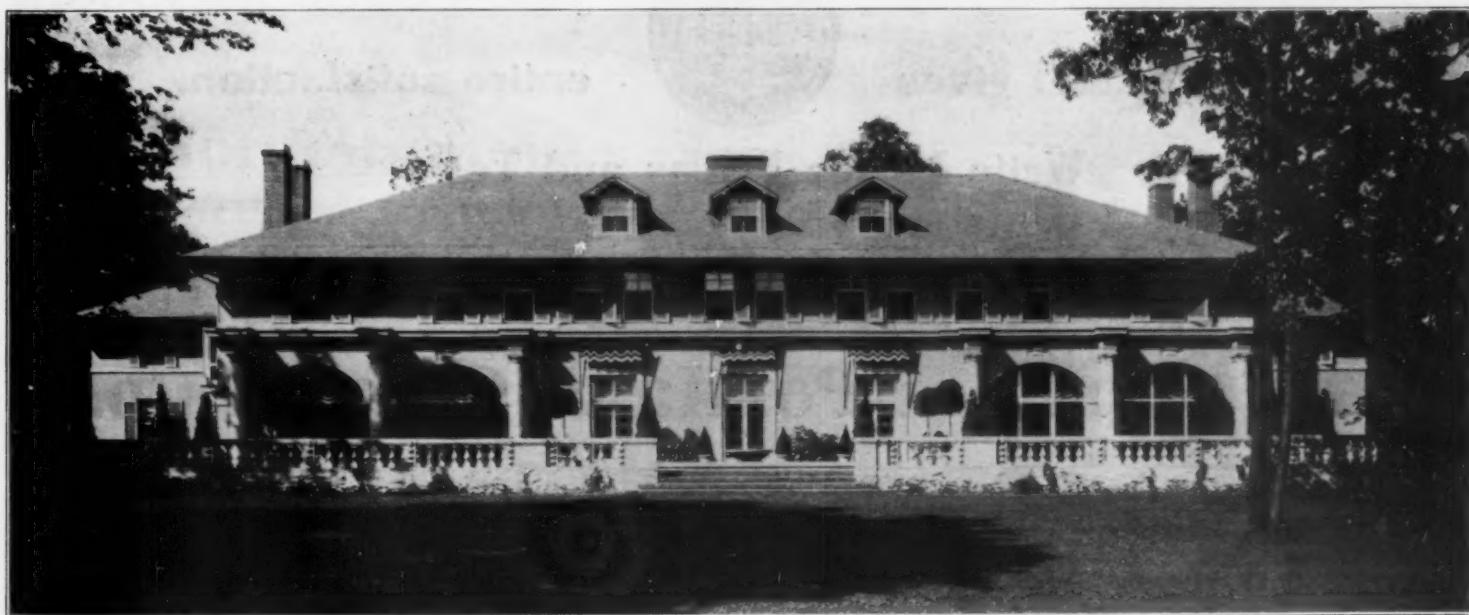
DETAIL OF CONSTRUCTION.

tion and who is a thorough believer in its superiority for home architecture, especially where it is desired to produce an architectural effect in perfect harmony with scenic environment.

ROCK PRODUCTS presents on this page two photographs of the Joseph T. Ryerson residence, now just finished at Lake Forest, the aristocratic Chicago suburb. One of these is a general view of the build-

ing, the other a detail showing the concrete surface finish. The architect for this work was Howard Shaw of Chicago, and the William Adams Company, also of Chicago, were the general contractors. Universal Portland cement was used exclusively.

The Ryerson residence is constructed throughout of reinforced concrete. The concrete used in the walls is a mixture of one part Universal Portland cement and six parts of lake shore unscreened gravel. Before the concrete was placed the forms were first plastered with screened torpedo gravel and cement mixed one to three. The plastering of the smooth forms was put on about one inch thick and the forms were removed after the walls were thoroughly set, which was about one month after the concrete was placed. The exterior finish of the building was produced by bush-hammering the entire surface. The ornamental work about the residence was cast in plaster-of-paris molds and set in place exactly as cut stone is done. On account of the extreme care of the contractors in making the joints, and the uniformity of the gravel, the exterior presents a most attractive appearance in both texture and color. The building is one of the finest examples of the possibilities of concrete in the construction of artistic dwellings.



THE RYERSON RESIDENCE AT LAKE FOREST, ILL. HOWARD SHAW, ARCHITECT.

Can Be Used With Absolute Safety



Hundreds of users have  
testified to the excellent  
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Send us trial order today or write for our booklet on "Artistic Concrete" - free. It tells all about our many lines of builders' supplies and our unmatchable prices.

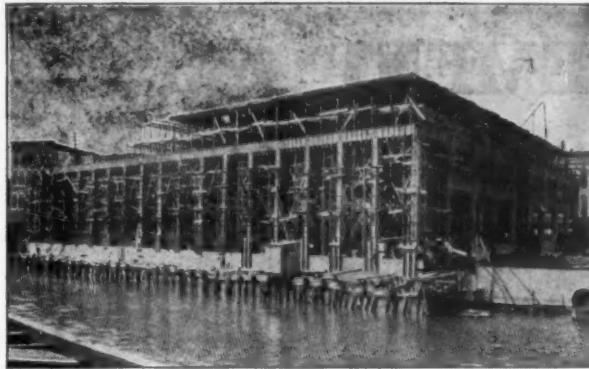
**The Bartlett Company**  
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## Medusa Water-Proof Compound

Makes all Concrete Watertight

The foundations and floor in basement, all of cement, in the Bostwick-Braun warehouse, Toledo, O., here illustrated, contain Medusa. Write for pamphlet describing its use.



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Castings for parts that receive the shock—which MUST be  
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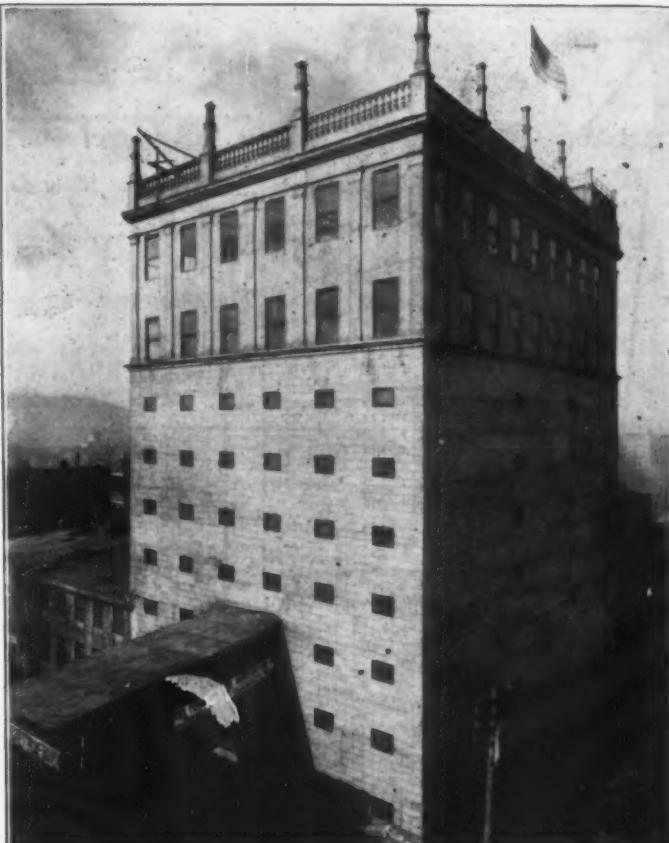
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It is guaranteed the equal of any  
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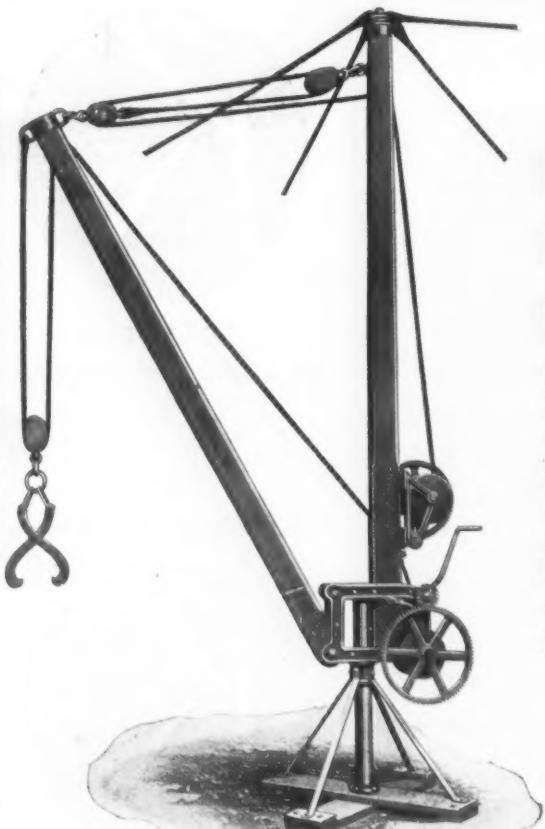
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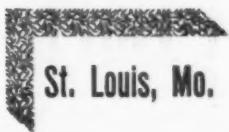
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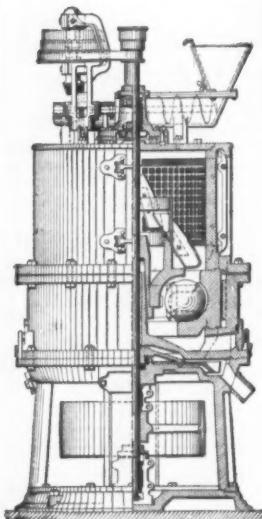
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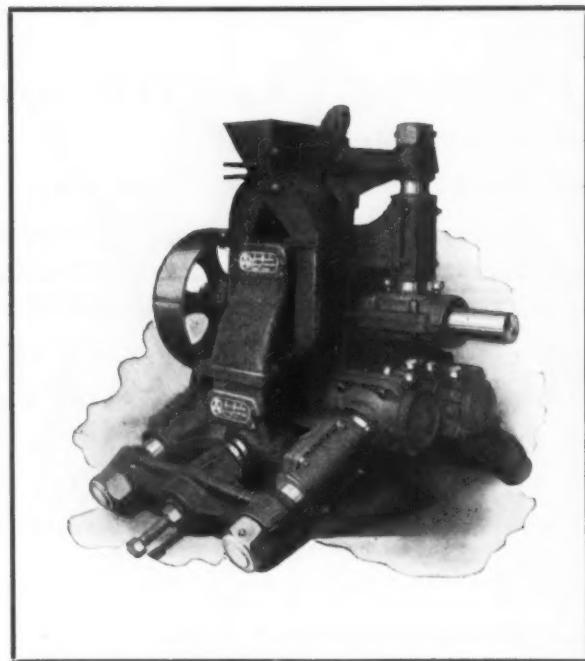
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Always Full Strength  
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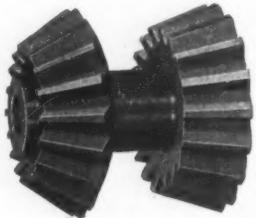
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CHATTANOOGA, TENN.  
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Woodward Building  
BIRMINGHAM, ALA.

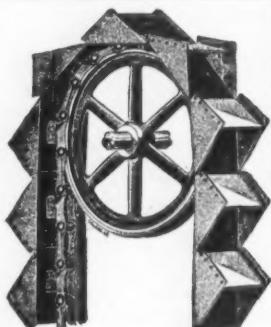
## What's in a Name?



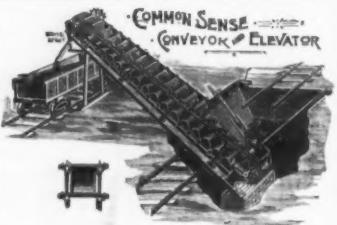
Everything when the name is "Nuttall" applied to gears. It means the limit in the art of Gear making. One of our hobbies is quick deliveries.

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R. D. NUTTALL COMPANY  
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Send for Catalog 25



THE GENERAL CRUSHED STONE CO.,  
So. Bethlehem, Pennsylvania,

have been using one of our Common Sense Elevators for six years—  
capacity 400 tons an hour.

THE C. O. BARTLETT & SNOW CO. CLEVELAND,  
OHIO.

HIGH GRADE

## FIRE BRICK

For Cement Works, Lime Kilns, Cupolas, Steel and  
Iron Works of every description. :: :: ::

Louisville Fire Brick Works,

K. B. GRAHN, Prop.,  
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Hand Made — Hard Burnt  
FIRE BRICK

— are the best for —  
Lime and Cement Kilns

ADDRESS

Mitchell Clay Mfg. Co.

ALL SHAPES

St. Louis, Mo.

CATALOG

The Buckeye Fire Clay Co.

Manufacturers of  
Sewer Pipe, Flue Linings, Chimney  
Tops, Fire Brick, Grate Tile, Ground  
Fire Clay, Wall Coping, Etc.

UHRICHSVILLE, . . . OHIO



# CEMENT-KILNS

Lined with Our **BAUXITE** Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

## Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile  
Fire Proofing, Flue Lining.

## Laclede-Christy Clay Products Co.

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Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

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THE LARGEST LIME MANUFACTURERS IN THE WORLD.

# The Ohio and Western Lime Company

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Portoria, Ohio  
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Sugar Ridge, Ohio  
Tiffin, Ohio  
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Limestone, Ohio  
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MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio White Finishing Lime, Ground Lime,  
Lump Lime, Fertilizer, Hydrate Lime,  
Cement, Plaster, Hair, Etc., Etc.

Capacity  
8000 Barrels  
Per Day

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## Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

SEND FOR PRICES.

MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

# A. & C. Stone & Lime Co.

MANUFACTURERS OF

## CRUSHED STONE AND WHITE LIME

Total Capacity Crushed Stone 4000 Tons Daily

Plants:

GREENCASTLE, IND.  
RIDGEVILLE, IND.  
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Lime Kilns at  
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General Office: 17 N. Penn. Street,  
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## The Clyde Hydrator

is the accepted standard of highest efficiency, economical operation, positive results and general all around serviceability in hydrating machinery  
There are more of them in use than all others put together

They have proven their merit under all conditions

We will furnish full information, booklets and interesting data on your request

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Manufacturers

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# MITCHELL LIME

Is Chemically Pure and Practically Free from Waste

The Strongest White Lime on the Market. Used and recommended by Sand-Lime Brick Manufacturers, Chemists, Soap and Glue Works, Plasterers and Masons.

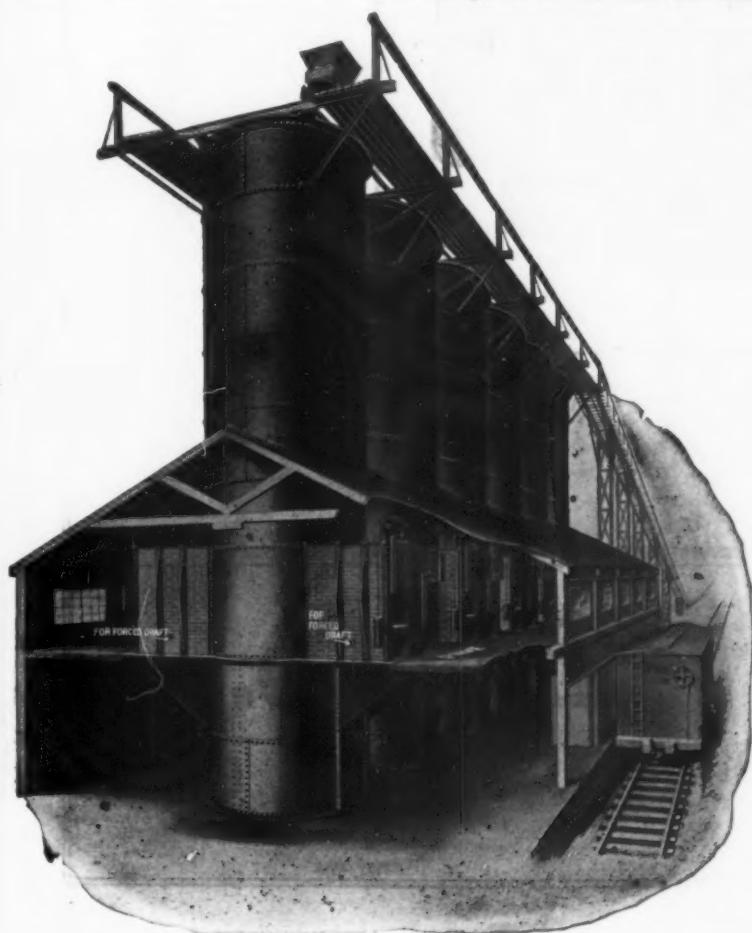
*Prices Cheerfully Submitted*

## Mitchell Lime Company

MITCHELL, :: :: :: INDIANA



WRITE FOR INFORMATION



## Keystone Lime Kiln BROOMELL'S PATENT

This illustration shows a battery of six Keystone Lime Kilns set up complete ready for operation. No foundations being required and no stone work above the ground level, the kilns can be set very close together. Each kiln is arranged with four furnaces which are supported on heavy brackets. These same brackets support the timbers on which the firing platform is built, the timbers extending out to the edge of the building and supported on posts. The firing platforms are bricked from end to end, making ample room for firing and storage of coal. The ground floor on which the lime is discharged is entirely clear from posts or other obstructions. Note the substantial manner of supporting the platform on top of the kilns. Send for catalogue.

Broomell, Schmidt & Steacy Co.  
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# Bates Valve Bags

No tying of paper.

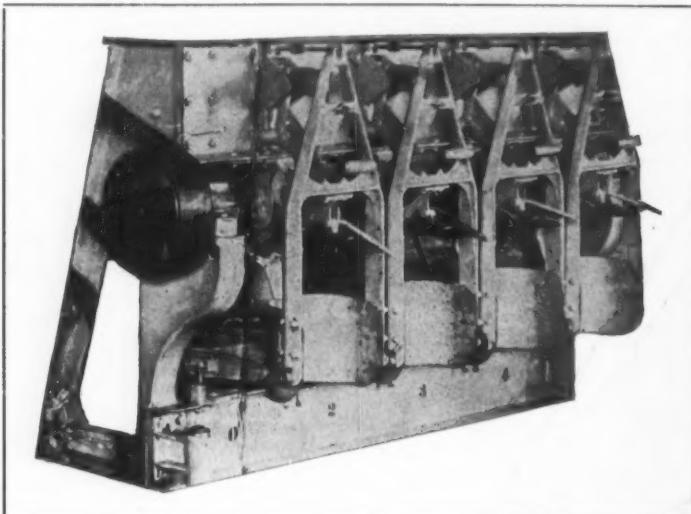
Cotton tied by machinery.

Three men can fill and load in car 800 barrels daily.

Weights best the business has ever known.

Saves thousands of dollars in string and overloading  
of sacks.

Not half the dust caused by old methods.



Write for proposition.

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## Bates Valve Bag Co.

1411 Schofield Bldg.,

Cleveland, Ohio

**GANDY**  
IT TAKES GRIT

to show up belting. The ordinary kinds soon go to the scrap pile when compelled to work amidst the rock dust and water of quarrying and stone dressing machinery.

**Gandy Red Stitched Cotton Duck Belts** however last as long under these conditions as elsewhere. They are made for just such service, and will outlast any other several times over. They cost but  $\frac{1}{2}$  as much as leather belts, and are absolutely unequalled for tractive powers and straight true running. Booklet—"Experience with Gandy" free on request. (Another Money Saver—Gandy Belt Dressing)

MAURICE GANDY  
FOUNDER OF THE GENUINE  
RED STITCHED COTTON  
RED DUCK BELTING

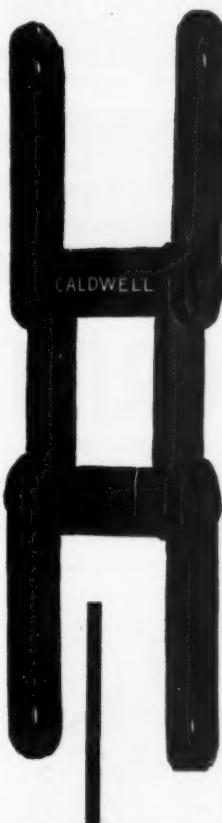
THE GANDY BELTING CO.  
BALTIMORE MD.

**DRYERS**  
OF EVERY TYPE  
CONSTRUCTED FOR ALL PURPOSES.  
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS  
UNITED STATES DRYING ENGINEERING CO.  
66-70 BEAVER ST., NEW YORK, U.S.A.

# MACHINERY

FOR

## Industrial Plants



We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

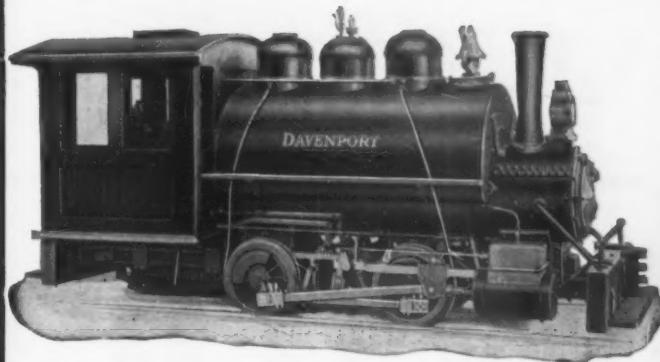
Catalog No. 28.

## H. W. Caldwell & Son Co.

17th St. and Western Ave., Chicago

Fulton Bldg., Hudson Terminal, No. 50 Church St.,  
NEW YORK CITY

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Special Designs for Special Purposes  
Any Size, Any Gauge, Any Weight  
Write for Prices and Particulars

**DAVENPORT LOCOMOTIVE WORKS**  
DAVENPORT, IOWA

## Limestone and Shale

FOR MANUFACTURE OF

## Portland Cement

ON THE  
**Illinois Central Railroad**

IN THE  
WEST AND SOUTH  
Coal, Water and Good Labor

For Full Particulars Address

**J. C. CLAIR, Industrial Commissioner**

I C. R. R. CO.  
No. 1 PARK ROW, CHICAGO

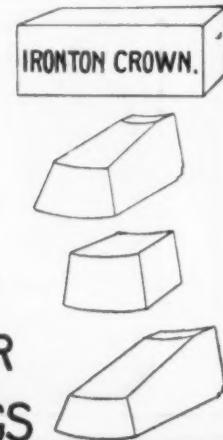
# ROTARY CEMENT LINERS.

## ASHLAND FIRE BRICK CO.

ASHLAND, KY.

# LIME KILN LININGS.

GROUND CLAY  
FOR  
WALL PLASTER  
AND  
BOILER SETTINGS



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FOR

BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

**American Process Company**  
68 William Street, NEW YORK CITY

## RUGGLES - COLES DRYERS

RUGGLES-COLES ENGINEERING CO.

NEW YORK CHICAGO

## The Cummer Continuous Gypsum Calcining Process

See Other Advertisement Page 64  
THE F. D. CUMMER & SON CO., Cleveland, Ohio

Seven plants in successful operation producing about 1,500 tons per day.

## BRICK and MORTAR COLORING

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."

CORRESPONDENCE SOLICITED.

**CLINTON METALLIC PAINT CO., CLINTON, N. Y.**

## CONCRETE BLOCKS

Absorption 6 per cent, Weight 170 Lbs. Cu. Ft., Strength 2,400 Lbs. at 28 Days. If you can't make 'em, buy Shale Gravel and 10 per cent Cement.

Then Write To  
JAMES F. HOBART  
CEMENT & SAND-LIME ENGINEER  
Willoughby, Ohio.

## For Immediate Shipment

Austin Gyratory Crushers.  
Austin, Western and Aurora Jaw  
Crushers.  
Quarry Pumps, Steam Drills.  
Sterling Wheel Barrows, Concrete  
Mixers.  
A lot of bargains in rebuilt crushers,  
all sizes and kinds.

Write for prices and catalogues.

The Williams Contractors Supply Co.  
COLUMBUS, OHIO

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**C. K. WILLIAMS & CO.**  
EASTON, PA.

The Largest Manufacturers in the U. S.

## BRICK AND MORTAR COLORING OF ALL SHADES

CORRESPONDENCE SOLICITED. SAMPLES AND ESTIMATES  
CHEERFULLY FURNISHED ON APPLICATION.



Lime Kilns and Plant of Blair Limestone Co.,  
Canoe Creek, Pa.

Designed by  
Henry S. Spackman Engineering  
Company  
42 N. 16th Street Philadelphia, Pa.

Tell 'em you saw it in ROCK PRODUCTS.

# ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VII.

CHICAGO, JUNE 22, 1908.

Number 12.

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Communications on subjects of interest to any branch of the stone industry are solicited, and will be paid for if available. Every reader is invited to make the office of Rock Products his headquarters while in Chicago. Editorial and advertising copy should reach this office at least five days preceding publication date.

#### TERMS OF ANNUAL SUBSCRIPTION.

In the United States and Possessions and Mexico..... \$1.00  
In the Dominion of Canada and all Countries in the Postal Union..... 1.50  
Subscriptions are payable in advance, and in default of written orders to the contrary, are continued at our option.

Advertising rates furnished on application.

#### BRANCH OFFICES:

NEW YORK CITY, Room 417 St. James Bldg. NEW ENGLAND, 16 Merchant St., Barre, Vt.  
PHILADELPHIA, Pa., 916 Rothschild Bldg.

Entered as second-class matter July 2, 1907, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879.

#### The Chicago Convention.

The presidential nomination of the Republican party has taken place according to the program, and with William H. Taft of Ohio in the saddle and the unanimous approval of the platform on which he will conduct his campaign the commercial and manufacturing interests of the country have the best assurance that the last vestige of panic excuses have been wiped out and "the winter of our discontent" has come to an end. As far as politics are concerned, there is no further reason for depression in business. The quicker everybody gets busy, realizing that the conditions which will obtain for the next four years are now settled, the better it will be for all concerned.

The Roosevelt policies will be continued and completed according to the pledge of the ruling party and its candidate, for he is the kind of a man that makes no idle promises. Greater than all this, the support by the American people of the measures and the man who represents them means four years of stability and confidence—the kind that it will do for the business man to bank upon—the kind that we all know it is safe to finance. This satisfaction of the people means a period of prosperity greater and brighter than any we have had heretofore. Unless we should happen to be members of the returning boards, there is no use waiting for the counting of the votes.

The business and the profits are lying around right in front of our doors. Let the dealer, the operator, the manufacturer of materials, the contractor and the investor get busy right away so that the ripe fruit that is now in the orchard may sweeten the prosperity of the coming four years ere it actually begins. The capitalists who have been watching the progress of events with bated breath can now cut their pursestrings and collect in advance, by reason of the depression in price of every conceivable commodity, the profits of the prosperous era which is assured to this country by the promulgation of the Chicago platform and the uninterrupted progress of well-known and universally commended policies of government.

The feature of politics thus completely disappears from the commercial horizon, and those who are first to realize this condition will be those who collect first and secure in largest measure the fruits of the

new chapter of American industrial expansion. No candidate for the chief magistracy of the United States was ever so well prepared for the office by personal inspection and direct contact with our relations abroad and in our possessions beyond the seas, as well as in the important affairs right at home, as this same William H. Taft.

No matter what your political convictions may be, that matter is practically settled, and as business men it is up to us one and all to roll up our sleeves and pitch in.

Light partition tiles made of stucco and another kind made of cinder concrete are the successful features in the way of new structural commodities. Both have had a very large sale and met with the approval of specifying architects because they fill a long-felt want. The studding and lath partition has been relegated to the rear because it amounts to so much tinder placed in the interior of a building in case of fire. The tendency for fireproof construction has developed the need of a fireproof or rather fire-resisting partition material which will not add materially to the dead load of the building, and this has been efficiently met by the two new commodities developed and introduced in the present season. Both are light and offer a rigid, non-sound-conducting, vermin-proof partition.

Portland cement, that great index of the building material trades, still rules low in price, although nearly all the mills are running close to capacity and the tremendous output, which it seemed at the beginning of the season would be impossible to move, somehow is finding consumption right along to keep up to the grinding machinery, for few, if any, of the stock-houses are blocked up with unsold cement. The secret is salesmanship. The cement industry of this country constitutes perhaps the greatest aggregation of competent salesmen in the world.

There is no such thing as a fireproof material; that is to say, there is practically no limit to the destructive power of extremely high heats in conjunction with sudden applications of cold water with force. Still concrete in all its various forms is conceded by all interested parties to be the best fire-resisting material yet devised, and the elaboration and multiplication of tests only goes to emphasize this fact. Recent reports of the inspections of the fire underwriters are at last beginning to give concrete materials their well-earned position as the best known fire-resistors.

The militant, progressive campaign of the National Lime Manufacturers' Association is arousing a great deal of interest in that line. At the midsummer convention of the association, which will be held at Cleveland, O., on August 12, lime manufacturers from every State in the Union will be assembled together if present indications and engagements are carried out. Practical co-operative effort works wonders.

The rapid return of prosperity may be noticed by the increased movement of building materials in the principal markets of the country. It begins to look from our watchtower as if the present building season will be fully redeemed by the time winter closes activities. Shipments of all kinds of building materials are steadily increasing, and dealers in supplies generally report a pronounced and growing improvement.

Now will the railroad construction departments get busy with those improvements which have been held in suspense before the oncoming rush of fall traffic records a muster roll of accident and havoc that will cost more money than the safety-providing improvements would come to?

The onward march of gypsum plaster products in the building material markets of the country reflects no little credit to the genius and enterprise of the captains as well as the boys on the firing line.

## EDITORIAL CHAT

If you are a—

*Manufacturer of building materials*, this is the auspicious time to advertise, because the dealers and contractors are getting busy and will need your goods for prompt delivery. Express your confidence in the awakening markets by liberal presentation of your goods. It will help the general situation some. Do it now.

*Dealer in supplies*, canvass your trade promptly to see the amount of goods that it will take to cover the demands in all lines of material. Then look over the advertising section of *ROCK PRODUCTS* carefully to see whose goods you want, and who are they who will appreciate your patronage, and proceed to stock up your warehouse in time to have the goods for the rush that is already at hand. There is no use longer to hesitate, because quotations are at rock bottom and the changes of schedule from this on will be sure to mark steady advances. The time to get busy is now if you want the season of 1908 to be the banner profit-yielder to your establishment.

*Builder of machinery and equipment* for the quarry or the cement, lime and plaster plant, you want to wake up to the present conditions, just opening the door of opportunities, by advertising your equipment with fulsome pictorial illustrations and complete descriptions. If you have a proposition that will make good, do not hesitate to offer your guarantee to express the confidence you have in your own lines, thereby inspiring the same sentiments in the prospective customer. The machinery and equipment that is right will help to develop a market, and *ROCK PRODUCTS* invites all such to go on with liberal boosts for their specialties.

In short, if the reader has any confidence in himself as a business man or in his product upon a comparative basis with the markets of the world, or if his system or machine is a profit-maker, let him make it known with all the power that publicity can throw into it, and confidence in the business situation will not be lacking so that any one could notice it. *ROCK PRODUCTS* has the complete audience of readers made up of the gamest, strongest and most progressive business men of America, who are always ready to do their part when opportunity presents itself properly.

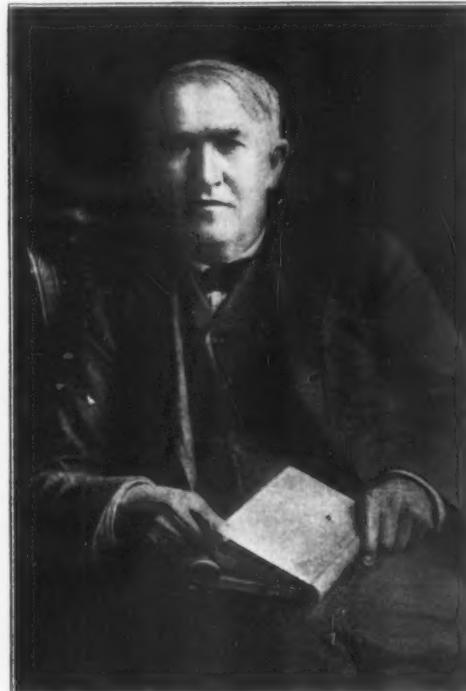
The President, in handing out suggestions to the Natural Resources Conservation Commission, emphasizes again the importance of promptly taking up the matter of improving the internal waterways in such a manner as will bring about a lasting benefit to the people. The unsatisfactory results from expenditures already made by the Government are alluded to. The trouble has always been the lack of any general plan. The first natural step is to take up reforestation at the headwaters of the streams; next, to provide means for the storage of flood waters, and then to take up the matter of obstructions to navigation in the streams. After all this comes the important feature of terminals with adequate wharf and dockage facilities, and beyond that a new model of vessel must be devised to meet modern traffic requirements. Perhaps this last is the most important requirement to restore navigation upon our internal rivers upon a profitable basis. There has been no noticeable improvement in the models of river craft in seventy-five years, and nothing would be simpler if the requirements were generally understood.

There is a tremendous temptation in periods of depression and low prices, when goods are not bringing in the market anything like their actual manufactured value, to cut down the expensive features of manufacture in order to save as much of the loss as possible by means of such economies. This applies to other lines no less than to that of building material. The idea that nobody wants the goods anyhow gets hold of the establishment and permeates the whole organization, so that a feeling is developed that any old thing is good enough for the kind of price now ruling. It is in periods of this kind that the shoddiest class of goods are made. In the manufacture of dry goods and shoes, in the packing of meat and nearly every other industry, this system prevails to a great extent. The manufacturers of building materials of all kinds have more steadily maintained prices than in any other line, and generally speaking the integrity of the quality of every one of these products has been maintained regardless of the lack of profit that has prevailed in the stagnant markets for

many weeks. We have not heard the slightest criticism, and we congratulate the manufacturers of building materials that they have had the sound business sense to maintain the quality of their goods through all this period of depression. Slipshod methods could mean nothing else but ruination further on when the actual demand for the commodity begins to be developed in quantities that would take up all the possible production. Let the good work continue so that the purchaser who gets the goods upon the low quotations of a stagnant market will have the same quality that he would get if the markets were short of goods on account of the great demand.

Alexander Marshall, of Alton, Ill., who has been identified with the crushed-stone business for many years, being both a practical quarryman, geologist and chemist, has invented a new fuel by utilizing the carbon contained in limestone in conjunction with organic combustible material. It is claimed by Mr. Marshall that his new fuel is much cheaper than soft coal as measured by the ton, and a difference of double the number of heat units is claimed for it. Illuminating gas can also be produced by the same process for a few cents per thousand cubic feet.

George H. Keyes of the Etna Powder Company has taken up his residence in Louisville, Ky., where,



THOMAS A. EDISON.

Who recently entertained the Brooklyn Engineers at his Cement Plant.

provided with a big magazine in the suburbs of the city, he supplies the powder requirements for the many quarries of the Louisville district. He is in the booming line, although he says business has been a little slack so far this season.

J. A. Ogden of New Braunfels, Tex., mechanical engineer and superintendent of the Dittlinger Lime Company, was a Chicago visitor this last month. He says that the big operation that is being started up in Central Texas is rapidly taking shape and getting all the rough edges worked off, so that they will be running up to capacity in a very short time.

Frank W. Winter, connected with the only important lime-producing concern at Honolulu, Hawaiian Islands, is studying American methods and improvements in the manufacture of lime. They have practically decided to put in an extensive hydrating plant, and there are plans afoot to build a Portland cement plant on their property, having a large amount of materials suitable for that purpose.

C. M. Timmons, sales manager of the Kosmos Portland Cement Company, is not overlooking any bets. He added another laurel leaf to his crown by landing a contract last month for 100,000 barrels to be used for Government lock and dam work at Chattanooga. This is one of the biggest orders ever booked in the South.

Charles C. Kritzer, the redoubtable apostle of hydrated lime, is having a very busy season. He says that if there was any depression there was no lack of interest in the hydrating game at least. He has something like a half dozen plants under construction at the present time. He has just completed an outfit for the Lowell M. Palmer Company at Yorktown Heights, N. Y. He is working on the new plant for the Hannibal Lime Company at Hannibal, Mo., and has just begun the construction of another plant for the Lowell M. Palmer Company at York.

W. L. Dow of the Perfection Block Machine Company, Minneapolis, is in Boston installing a big plant at Chelsea, which city, a part of Greater Boston, will be rebuilt largely of concrete.

William Kind, well known to builders' supply dealers throughout the United States on account of his former connection with the Toledo Builders' Supply Company of Toledo, O., and through his prominence in the National Builders' Supply Association, has accepted a position as salesman in the New York office of the United States Gypsum Company. He is a son of Richard Kind, who has for so many years been prominently identified with both the National and the Ohio builders' supply associations. Mr. Kind has had the necessary experience to eminently qualify him for his present duties, and we predict a successful career for him in New York City. He is connected with the plaster department, which is under the management of Harry Hobart.

H. F. Dorchester, who travels in New York State in the interest of the United States Gypsum Company, was a recent visitor at the New York office of his firm. Incidentally, Mr. Dorchester viewed the sights of Broadway. He reports a steady improvement in business throughout his territory and expects to see an early revival of general business activity.

When manufacturing business gets slack, and every man who has the responsibility of a big investment has his own troubles to provide orders to keep the wheels going around, it is disheartening to come up bump against convict-made goods. The penal institutions as we have them today are nothing less than immense government-fostered factories safely sheltered from the vicissitudes of legitimate business that constitutes a part of the commercial system. The penitentiary shoe-shop or cooper-shop or any other kind of shop goes serenely on piling up a stock of goods, altogether regardless of the financial and commercial conditions of the markets of the country, putting the day of recovery and resumption of activities further and further away. Penitentiary goods do not have to produce a profit. The institution is supported by taxation drawn from the profits of goods with which it comes in competition, and the injustice of a manufacturer contributing by taxation for the support of a competitor to absorb a part at least of the very market whence his revenue must come, is too apparent.

Penitentiary rock-crushing plants are already in evidence. The latest to be proposed is a Penitentiary Portland cement plant. The product of the convict's labor is a problem that has taken up the attention of statesmen for ages, and we seem no farther along than at the start.

It is not just for a State government to invest large sums of money collected by taxation on manufacturing ventures to produce goods coming into competition with the taxpayers themselves. To provide high-priced labor-saving devices of every description and modern factory organizations to assist the convict to produce the greatest amount of returns with as little labor as possible, is not in keeping with the original idea of penal servitude. Indeed, it is scarcely punitive even in slight degree. When the free workman, attempting to fill all the engagements of good citizenship, and the legitimate investor, who pays the taxes, find want and ruin staring them in the face, it is time to call a halt. Perhaps penal servitude would be a stronger object lesson according to the old legal idea if there were no labor-saving machinery used in the penitentiary shops, and if there were no way provided to escape from hard manual labor, true to the formal words of the commitment by the court. It is altogether possible for the convicts of the present day to work with State-provided implements and tools in comfort and so put out of employment the honest toiler who can not afford to provide himself with such tools. There can be no such thing as real profit in the conduct of a penal institution workshop, no matter how many constructors and officials may make money out of the operation, because the seeming profit is wrung out of honest toil and legitimate investment at the other end.

# FOR THE SALES AGENT

## TO DEVELOP SALESMANSHIP.

The object of this department is to provide for the sales Agents, general, traveling and local, a place where they can meet each month, talk over the best ways to improve the business in which they are interested, and where important happenings may be chronicled so that the business-getters in the East, West, South and North may coöperate for the general up-building of the building-material business.

The editors of ROCK PRODUCTS invite every live salesman to join hands to attain the objects sought. This is your own department. Fill it up with your own sayings, but do not forget the object.

## Salesmanship.

The qualifications which go to make a good salesman are not easy to define, because no two men get business the same way. In the first place one must have a thorough knowledge of the business, although a salesman sometimes can sell an article he knows little or nothing about where another who knows all about it is forced to answer questions which are embarrassing and sometimes ruin the sale. Personality is a strong card, for an engaging personality frequently gains business, although again some of the best salesmen are grouchies who never smile. Ease of manner and naturalness are also good assets, as the man who is ill at ease, and seems to be making too great an effort, frequently spoils his chances. Just as the actor who apparently is not acting at all, but appears to be his natural self, is the finished artist.

Being a good judge of human nature frequently enables the salesman to know when and how to handle his customer. Knowing when to strike and how hard to strike is very essential in closing a deal. In short, a good salesman will never leave a man sore, for as soon as he sees he has passed the danger line he gets away with some happy remark calculated to leave the buyer in a pleasant state of mind. Many a sale is lost because the salesman did not push the matter at the psychological moment. Just as he can talk himself into an order and out again because he doesn't know when to quit.

It is not always good salesmanship to sell a man what he does not want or to sell him more of an article than he wants. Next to misrepresentation it is one of the worst traits to be found in a salesman. One ought not only to be familiar with the business he is presenting, but also to a certain extent with that of the individual whom he is trying to interest. It is a waste of time to load a man up with something he does not want or with more than you think he can comfortably sell, because you will in that case have everlastingly ruined your chance to do any business



H. M. FETTER, PHILADELPHIA.  
(Wm. G. Hartranft Cement Company.)

with him in the future. On certain commodities it pays to load a man up, because he will then make a strenuous effort to get rid of the stock and push it. But in most lines of goods this proves to be a boomerang and results in more harm than good.

So as a matter of fact it does not necessarily follow that the best salesman is the man that sells to the greatest number of people or the largest orders. A salesman of this character can do more harm in one trip than three others can straighten out in a year. Of course, looking at a salesman from a cold business point of view, one is apt to accord the palm to the one who is able to get the highest price. Some salesmen pride themselves on the fact that they are able to get more money for the same goods than the other fellow, regardless of what the standard or regular selling price is. Some firms, however, are just as particular that their representatives do not ask more for their products as they are that they do not sell for less. Getting a higher price has its disadvantage in that nothing is calculated to make a pur-chaser quite so sore as to find out later that he has been stung. And there is always the chance that he will discover it sooner or later, and when he does, look out. Selling below the standard price is to be decried. It is the poorest kind of salesmanship. An office boy can sell goods below the price, providing, of course, the man is in the market at the time.

The good salesman never has an unkind word for his competitor. There are buyers who encourage salesmen to knock their competitors for the purpose of finding out the weak points, if there are any, in the armor of the other man. However, such a man doesn't think any more of the knoeker for having given him the information. You will usually find a salesman hammering his most successful rival. He does it unconsciously. He may have come across a dozen men who had just placed orders with the other fellow and found that he was unable to get a look in. When our salesman reaches the thirteenth man, the very mention of the other fellow's name is calculated to make him have a fit. He will froth at the mouth and work himself up in a frenzy, thus killing any possible chance he might have had for getting an order.

An even temperament, an unfailing good nature, a kindly disposition are just as essential to successful salesmanship as a fine line of goods. The salesman who does not believe in what he has to sell can never be a success. If he thinks that the other fellow carries a better line of goods than he does it is very hard for him to put up a convincing argument. It is next to impossible to make some one else believe in what you have to sell if you do not believe in it yourself.

Timidity does not win orders. The man who is easily bluffed, who quits when the first refusal comes, will never make his firm rich. Buyers are usually blunt and short because they frequently are pestered to death by the army of people trying to interest them. You may be the fortieth man who is trying to sell a man the same thing. It does not follow, because the others have been turned down, that you will be, but it is a cinch that unless you present yourself and likewise your argument in a different manner you will meet the same fate as all the rest.

The antithesis of timidity is brass, gall and nerve.



A. C. CRONKRITE.  
(Universal Portland Cement Company.)

These can be equally carried to extremes. There are salesmen who "grate on your nerves" the moment they give you their hand. Familiarity breeds a lot more than contempt sometimes. The frisky salesman is another pest that should come under the ban. It is all right when you know your man, but he sure you know him. All of this comes under the general head of study of human nature. It is this knowledge, once gained, that prevents a salesman from making the mistake of telling the latest raw story to the man who is a deacon in his church. It also prevents him from smoking cigarettes in the presence of a man who never smoked in his life and who thinks that the little seductive weed is the most disgusting thing in the world.

As a matter of fact the successful salesman is a many-sided man. He does not have to be a hypocrite. He does not have to pretend to be anything that he is not. There are just as many salesmen who have made a success that never touch a drop, never smoke and never swear, as there are among those that do.

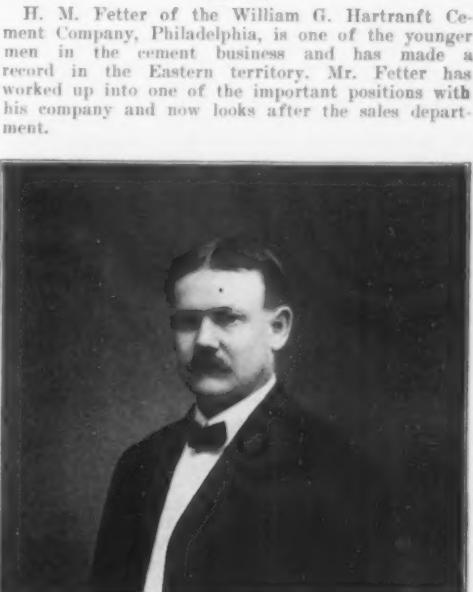
So it does not follow that the fellow with the greatest number of vices is the best salesman. Although there are successful salesmen who get drunk, it does not mean that you have to get drunk to be a good traveling representative.

The day of the old-style "good fellow" kind of salesmen who frequently got on a periodical spree is over. He has been supplanted by the nervous, wiry, energetic chap who is on the job every minute; who, while he may not be as brilliant, makes up by his persistency and stick-at-it-iveness.

This comes from Michigan, and it's all right too: "A good sales manager in these days when profits are pared down to the quick can't afford to have any holes, no matter how small, in his management; but there must be give enough in his seams so that every time he stoops down to pick up a penny he won't split his pants. He must know how to be big as well as how to be small."

One of the latest recruits to the ranks of cement salesmen who have "made good" is A. C. Cronkrite of the Universal Portland Cement Company. This company has a knack of picking up good men, and a line-up of their sales force would make the average cement company green with envy. They are clean-cut, bright-looking fellows every one of them. Mr. Cronkrite looks like a modern advertisement for a clothing house. He is one of these broad-shouldered, college-bred boys that ingratiate themselves to you at once. In addition to his natural or physical qualification he combines a knowledge of the cement business and an even temperament.

Walter J. Bennett, the Southern representative of the Whitehall Portland Cement Company, with office in the Candler Building, Atlanta, is one of the best known of the "boys on the firing line" in the Southern field. Mr. Bennett has only been in the South for about two and one-half years, but enjoys a large acquaintance among contractors, architects and users of cement. He is a competent man and has a laboratory in connection with his office, where he can make complete tests of cement and concrete. Being a man of force and caliber, he is a worthy exponent of the well-known Whitehall brand.



WALTER J. BENNETT, ATLANTA, GA.  
(Whitehall Portland Cement Company.)



**The National Lime  
Manufacturers' Association**

Meets Semi-Annually.

W. E. Carson, Riverton, Va.	President
A. Newton, Chicago	First Vice-President
F. M. Palmer, Jr., New York	Second Vice-President
F. P. Hunkins, St. Louis	Third Vice-President
C. W. S. Cobb, St. Louis	Treasurer

Official Organ, ROCK PRODUCTS.

**The August Semi-Annual.**

The National Lime Manufacturers' Association has created more literature on the subject of lime-burning than all other sources combined. With them this work has been progressive. The next great event in the history of the association will be the semi-annual meeting at Cleveland, O., August 12, and the exposition of quarry and limeburning machinery which will be held at that time. This will include the most modern mechanical appliances for handling the stone from the quarry to the manufactured lime in the car. It will be to the interest of every lime man, from Maine to California, from Calcutta to the North Pole, to be on hand.

Uncle Sam brings to the office of ROCK PRODUCTS very often inquiries as to fuel and the handling of special kinds of stone and the burning of certain characters of lime, etc., all of which we answer as best we can. They show the importance and necessity of such an exhibition as will be given in Cleveland. Those interested in putting their equipment in better shape for getting a profit out of their limekilns should make August 12 their vacation day and be on hand at Cleveland.

**The Exhibits.**

The following notice, issued by the president of the National Lime Manufacturers' Association, is of special importance to exhibitors:

To the Manufacturers of Machinery for Use in Quarrying, Limekiln Plant Engineers and Constructors, Hydrating Plant Builders, Manufacturers of Lime-Grinding Machinery, etc.:

E. H. Defebaugh, editor of ROCK PRODUCTS, has been appointed a committee to make all arrangements, etc., for exhibits to be made at the National Lime Manufacturers' semi-annual meeting, to be held in Cleveland, August 12, 1908. Please communicate with him.

W. M. E. CARSON, President.

**From the President of the National.**

RIVERTON, VA., June 10.

To the Lime Manufacturers of the United States,  
Greeting:

The attitude of many lime manufacturers toward the National Lime Manufacturers' Association reminds me of the story of a tramp who drifted into the back yard of a well-to-do farmer.

The farmer belonged to that class of persons who are generous to the needy, but have no patience with a loafer, so when he saw this able-bodied tramp his bristles began to rise.

The tramp, undeterred by the farmer's angry looks, his sensibilities (if ever he had any) having been hardened by repeated rebuffs, asked the farmer for supper, a night's lodging and breakfast. This request was met with a prompt refusal, coupled with the emphatic statement: "Any person who eats or sleeps here must earn his board and lodging." The tramp fell in with this idea, and said he would, and could, do anything, giving the usual hard-luck spiel. After considerable talking the farmer agreed to keep him over night, provided he would kill off the rats that infested his place, rat-extermination being one of the varied accomplishments claimed for himself by the tramp. After breakfast the next morning the tramp was preparing to leave, when the farmer reminded him of his contract. Cheerfully the tramp said he was ready to perform his part, and asked that the room be cleared of all furniture. This being done he asked that a stool be placed in the middle of the room. Then, taking the farmer's walking-stick in his hand, he mounted the stool and said to the farmer: "Bring on your rats!"

And so many of the manufacturers of lime, after asking for information about the National Lime Manufacturers' Association, getting hints, pointers,



CHARLES WEILER, MILWAUKEE.  
(Wisconsin Lime and Cement Company.)

and what else they could without trouble to themselves, when requested to join the association, and by their co-operation and assistance help along the good work, ask that some ridiculous and impossible thing be done. Mounting on the stool of criticism, safely above the level of work, they arm themselves with the club of interference.

Now, to these gentlemen I will say: The National Lime Manufacturers' Association is a live, earnest body of men, who have made up their minds to do certain things, and they are doing them, and as the work they have embarked upon progresses, and as the ideas that are put forward are incubated, it will not be as now, an invitation to you to join the association, for you must know that when any order or association becomes of great value to its membership, entrance, in like proportion, becomes difficult. The first step in that direction was taken when, at the meeting in February of this year, A. A. Stevens suggested that no more money be spent in seeking membership, but that all efforts be directed toward the development of ideas that would benefit the membership already enrolled. It has also been suggested that no more information be given out as to problems solved, or even as to thoughts that are being developed, and to such an extent did this idea prevail that the office of permanent secretary was abolished. It was only after considerable effort that the campaign I have inaugurated was ratified, and this may be stopped at any time. I mention these facts that you manufacturers who have been procrastinating may no longer delay in sending in your applications for membership.



W. B. HILL, KANSAS CITY, MO.  
(Ash Grove Lime and Portland Cement Company.)

This letter was to be especially directed along the lines of giving reasons why you should attend the semi-annual meeting to be held in Cleveland on August 12, 1908. I would find it difficult to enumerate all the reasons, but I will give you a few:

1. Because your attendance means encouragement.
2. Because not only you, but your neighbor, will be benefited.
3. Because it helps the social feature.
4. Because there is inspiration in large crowds.
5. Because the feature of this meeting will be an exhibit by the different manufacturers who have been developing their thoughts and ideas into the definite form of machinery, etc., whereby the cost of quarrying can be cut to a minimum. Improved kilns for reducing cost of fuel, barrel machinery that almost eliminates the labor cost, and simplified hydration plants, making a success of this most important adjunct to the lime business, will be exhibited.
6. Because some very fine papers are going to be offered.

It is very disheartening to the officers of any association not to have the encouragement that comes from the attendance of the members at their regular meetings, and encouragement ought to be given the men who are giving their time and services to a work of this kind.

It is no small matter to prepare a paper for presentation to a meeting such as the National Lime Manufacturers' Association assembles, nor is it a light work to organize or keep up such an organization as the National Lime Association, and the best tonic that can be administered to the officers and to those members who are interested enough in the association to give papers, is your presence at the annual and semi-annual meetings.

The second reason is the reason above all reasons why you should attend. To my knowledge, no man has ever attended a meeting of the National Lime Manufacturers' Association who has not gone away saying that he had been much more benefited than the cost of the trip and the value of the time. And when I say it will benefit your neighbor, I do not mean the manufacturer in your own district. I am using the word neighbor in the broad sense that every man is your neighbor, and you will no doubt benefit your neighbor (perhaps he may live several thousand miles from you) by suggesting some question the answer to which would solve a problem that he is encountering, or in like manner he may suggest a solution to some problem that is costing you an every-day expenditure, or awaken some thought that will lead to your improving and strengthening your plant or organization and that will materially show in your bank account.

It is a long and well established principle that man is a gregarious animal, and that it is necessary to the civilization and the general uplift of mankind that he should meet and mix with his neighbors; otherwise, he would become atavistic. And this is peculiarly true about the manufacture of lime. It is very easy to go backward, and take up old and obsolete ideas, and the only way to avoid such a condition is by meeting other manufacturers, thereby being healthfully stimulated to think, which means development.

It has been strikingly demonstrated a number of times in the meetings of the lime manufacturers that the social feature has eliminated many industrial wars; in fact, it means to any business or organization a safety valve when the too tense pressure of work and endeavor has wrought on the nerves so that safe and sane judgment has become warped and strained. In the quietness and seclusion of one's own office imagination will give one's competitor hoofs and horns, and trivial misunderstandings that might be settled by a word or two develop into serious differences. At assemblies of the National Lime Association there is a neutral ground of meeting. There we often find that the man who we thought had developed hoofs and horns is a better fellow than we are ourselves, and the fraternizing under such conditions as exist at the National Lime Association meetings has been a way to the healing of many wounds.

It is a great pleasure to meet the different members of the association. Let me be reminiscent a little, and take you with me. The first person we run across at a national meeting is the ubiquitous Defebaugh, the owner of ROCK PRODUCTS, who has a warm welcome and a glad hand for everybody, and who has done more for the National Lime Association than any other individual. He always has a room that abounds with good cheer and high spirits. Coming out of this room, we will no doubt meet Peter Martin, who has just been in to tell an extra good joke, and who always has time enough to advise a neighbor when he needs advice. Peter Martin is known as Moses in his section, for when the lime business was "in the land of Egypt" it was he who led it through the wilderness into the promised land.

When we get into Defebaugh's room, you will find, sitting around, a bunch of very good fellows, editors and associate editors. Probably you will find Fred Irvine, as broad as he is long, with a smile that will do your heart good. When you go you will feel that there is one place that you can always drift into and feel welcome.

In the lobby of the hotel we will find A. A. Stevens, emphatically discussing some question with three or four manufacturers around him. Stevens is a bunch of energy that works without a stimulant. Should this local option wave that is sweeping the South ever wash the Canadian line before receding, I will prophesy that the National Lime Manufacturers' Association will have the honor of presenting the United States with its President.

But this is "dry talk," and I will take you across the lobby, where you will see a great big, genial fellow, with heart the size of a wheelbarrow, and a hand like a ham. You will immediately recognize Ingersoll-Rand Burgess, and before he is done with us you will find yourself wavering in your loyalty to your presidential candidate.

But just before you go through the swinging doors you will be attracted by a "talking machine," whose every sentence ends with the expression "hydrated lime." He uses the fingers of his hands only to count the plants that he has installed this season, and of course you will find yourself face to face with Charley Kritzer. His very energy will drive you across the floor, where you will find a couple of tall fellows, with deep-set black eyes and square jaws. They are apparently making no effort; at the same time they have their "nippers" in everything. They are the Urschel Brothers, just as good a pair of fellows as were ever born in the same family. But your conversation with them will be interrupted by a tall man who slaps you on the shoulder and asks you to "try one of these." You will find that this man is offering you a Pittsburgh and Lauman of Pittsburg will be the man.

About the time you have lighted up your story, and are in the middle of a laugh that Lauman has given you, you will be attracted by a peculiar-looking pair who are walking across the lobby together, one long and the other short, neither of them having fallen off a Christmas tree. You will be told that one is Nisbett Latta, and the other Ross Mateer of the Combustion Utilities Company. While you look in wonder at this combination, a man will touch your elbow, and you will be face to face with a more pleasant prospect—the genial countenance of Charley Pote, who wants to tell you that his partner, Shoop, has just gone to Mexico to build a battery of their kilns.

All this time you have been wondering where is Charles Warner; surely he has not missed the convention. Somebody tells you there is a committee meeting going on, which means that that is the place you will find Warner. You drift into this meeting, and you find a very young-looking man presiding over it. After listening a few minutes to what this man has to say you feel convinced that nature has either been too rapid or too slow in development. Here is a man of thirty talking with the judgment of sixty, or a man of sixty with the appearance of a man of thirty. You are trying to make up your mind which of these anomalies it is, when Dittlinger of Texas gets on his feet and tells the committee to "be careful;" that he had been in the milling business, and what the United States Government thought they were going to do with him. And he does it in such a humorous way that you find the ripeness of intellect in the chairman (Charles Warner) only obtains in business, and that he is really only thirty. But the committee meeting must get down to work and is brought back to the serious consideration of its subject by W. B. Hill of Kansas City, whose proposition is incontrovertible—it always is, because Mr. Hill is one of the men who do not make mistakes. Mr. Hill's view of things brings the matter to a conclusion, and as you walk out you ask young Hunkins where is his father. Of course he tells you he has not speed enough to keep up with the Governor, but you feel lots better when you finally elicit the information that Mr. Hunkins, Sr., has just gone down to dinner.

A National Association meeting would not be worth while if Hunkins Senior and Junior were not there, and you hasten down to the dining-room to get a welcome from Mr. Hunkins, Sr. At dinner with Mr. Hunkins you will find Mr. Weyler, Col. Cobb, Mr. Newton and Mr. Meyers, and here you find around this table the dignity and conservative wisdom that has given the National Lime Manufacturers' Association its standing and importance. At another table you will see a couple of young fellows, Harry Bachtkenkircher and George Nicholson, Jr., who are right in the procession; at the same time "they do not care whether school keeps or not." Both of them have bunches of ability, are fine fel-



COL. C. W. S. COBB, ST. LOUIS.  
(Glencoe Lime and Cement Company, Treasurer of the National Association.)

lows, and are right in the ruck of enjoying life. "Nice," as Nicholson, Jr., is known, is a great hunter, and loves to tell you about the big game in the Upper Peninsula of Michigan. You have about made up your mind you are going to sit down and take dinner with this pair, when Claiborn comes in and tells you there are some fellows in the lobby who want to see you. Claiborn, at the same time, will hand you a little square paper-weight in the shape of a fire-brick, and before he is done shaking hands with you will have sold you a carload. If you do not believe me, I dare you to shake hands with him.

When you go out in the lobby to see who it is that wants you, you come face to face with the "real thing" of the Lime Manufacturers' Association, Lowell M. Palmer, Jr., of New York. Here description fails me, and words are without merit. To stay with Lowell Palmer through a meeting of the National Lime Association would require not only a dual, but a triple personality. During the sessions of the association you will find him alert, and always ready with sensible and well expressed opinions. This is one personality. From the shades of evening till the rap of the gavel calling the meeting of the next morning to order you will need to have your two other personalities on hand, for Lowell M. Palmer, Jr., is "a man among men," and "two men at a frolic or feast," open-handed, generous



WILLIAM URSCHEL, TOLEDO, O.  
(Woodville White Lime Company.)

and unselfish. But—"hark, from the tombs, that doleful sound!" Fleischer, with a ghost-like appearance and a piping voice, has just come into the lobby of the hotel, and another prince of good fellows is on hand for the meeting. When you are through shaking hands with Fleischer you feel as St. Peter said, "It is good to be here." But your cup of joy is not quite full, for that moment another train has arrived, and as the bus unloads, in comes the best fellow that ever trod shoe-leather, and you find your hand gripped by J. King McLanahan, Jr. Never was a name better bestowed on any person than King on McLanahan, because he is a "king" of good fellows. On the same train you will find Curtin and Dealy of Massachusetts, tip-top fellows, who have all the faults and none of the virtues of their Puritan ancestors.

You commence to feel like sitting down and resting, but before doing so you pass a couple of men in earnest conversation, and if you stop to listen you will find that Irving Warner and E. W. Lazelle are discussing lime problems from not only a practical but a theoretical standpoint; and here I would say that I do not believe the Engineering Club could do a better thing for the manufacturers of the United States than secure the services of Lazelle as its expert. He is a man of ripe judgment, fine reputation, a chemist of high standing, a hard worker, and a man of culture. He would bring to the National Association an experience already acquired in the manufacture of lime that would be very valuable.

By this time you will find yourself ready to sit down, and on one end of the lounge you will find in a group Messrs. Lauer of Rochester and Paxton of Virginia, one an old Union, and the other a Confederate soldier. Both having made their pile, they are living in the reminiscences of the past, and it is a treat to hear them tell their experiences. On the other end of the lounge are two of the most practical lime manufacturers in the United States, Messrs. Ekstrand and Cruden. If you listen to them long enough, you will come to the conclusion that you know the lime business without ever having seen a limekiln, and as you doze off to sleep, you will say to yourself again, as St. Peter said on the mount, "It is good to be here."

This is just a little sketch of a few of the members who attend the meetings of the National Lime Association regularly. Of course, there are a great many that I have not mentioned. I could keep on writing for a whole afternoon, telling you about men like Phil Dauernheim of St. Louis, Bradley of Pittsburgh, Sheridan of Toledo, Campbell of Duluth, Spencer of Toledo, Uthoff of Genoa, Thurston of Toledo, Orr and Quirk of Manistique, Mich., Peerman and Howe of Chicago, Burton of St. Louis, Tens and Bond of Milwaukee, Mueller of Grafton, Druecker of Wisconsin, Lucius Allen of Ontario, Glasgow of Tennessee, Duerr and Bye of Wilmington, Hurst of Maquoketa, Durnell of Philadelphia, but it would only be piling up adjectives on adjectives, and what you want to do is be at the meeting in Cleveland, Ohio, on the 12th of August, and meet this lot of good fellows yourself. You will find that the inspiration of a large crowd will be of great value to you. If you have any problem you want to solve, bring it with you, and ask the open meeting if some person can give you a line on how your problem can be worked out. If you do not get a satisfactory answer, the president will adorn your head with the best Panama hat to be found in Cleveland.

The principal feature of the meeting will be an exhibit by the different manufacturers who are interested in selling their ideas to the lime manufacturers. The importance to a lime manufacturer of getting to a central point where he can see the different equipments, etc., that go to the perfection of the lime plant, under the same roof, cannot be overestimated. At this meeting you will have an opportunity to weed the good from the bad, to hear criticisms from your brother manufacturers on machines, as to their good and poor points, and in the abundance of these criticisms you will be able to come to a satisfactory conclusion. This gathering together of the different appliances useful in the manufacture of lime will save you a great deal of money in traveling expenses, to say nothing of time.

If you have any intention of developing your plant along more up-to-date lines, or if you have an intention to build a plant, or to find out whether you are up-to-date in your methods, the opportunity will be open to you on the 12th day of August, in Cleveland, at the semi-annual meeting.

I have already had promises from more than a score of manufacturers that they would exhibit their machinery, etc., at this meeting. Added to this, the most attractive lot of papers that it has ever been the fortune of the National Lime Association to have before it for its consideration will be offered at the semi-annual meeting. Already papers covering the following subjects have been promised: On lime as a fertilizer, on the general proposition of hydration, on

## ROCK PRODUCTS

the use of lime in filtration, on the points in a lime-kiln that ought to be reinforced and strengthened to get the best results, both as to the life of the kiln and yield of lime, on how to organize a lime sales agency, and on the necessity of and how to compile cost statistics in the manufacture of lime, etc.

These papers will be by men of practical experience. Added to this is the suggestion that the trip be finished as a holiday by taking a boat from Cleveland, sailing up Lake Erie to Niagara, where the great Niagara Falls can be seen. You are requested to make this business trip one of pleasure by bringing your wife and family. The meeting will be held in Cleveland on August 12.

Again I urge you to become a member of this National Association, the entrance fee to which is \$25, which also pays all dues for the current year. Send your application and check to Col. C. W. S. Cobb, treasurer, Old Manchester Road and Boyle Avenue, St. Louis, Mo., and you will never regret it.

WILLIAM E. CARSON, President.

#### Lime Manufacturers in St. Louis.

ST. LOUIS, Mo., June 1.—In this market there are seven manufacturers of lime—that is to say, their offices are here, but their plants are situated at various localities in Missouri. The Colorado Lime Company's office and warehouse are situated at 4153 Clayton Avenue—accessible to all parts of the city and on the Chicago, Rock Island and Pacific Railroad, which admits of bringing in lime from their kilns without incurring switching charges. R. W. Gartside, the manager, informed the ROCK PRODUCTS man that the company's kilns are at Pillman and Spring Garden. At the former plant they manufacture black lime, while at the latter white lime is produced. Modern steel-jacket kilns are installed and wood is used in the manufacture of lime. Besides lime the company deals in various brands of Portland cement and handles Plymouth and Monarch and "Roman Nose" hard wall plaster, metal lath, hair, mortar color, etc.

The Banner Lime and Cement Company's principal office and warehouses are situated at 2438 Kosciusko Street. From George P. Johannes, president, I learned that at Kimmiswick, Mo., the company has four kilns, modern steel jacket, and manufactures black lime, using both wood and coal. The daily capacity is 1,000 bushels. The company also handles Portland cement (Red Ring and Atlas brands) and Louisville common. In hard wall plaster they deal in Acme, Monarch and Agatite. They sell considerable "Perfection red" for mortar use, manufactured by the Chattanooga Paint Company. Besides the two warehouses, between which a spur track serves in handling freight (it accommodates six cars), the company has stable room for sixteen herd of horses. Mr. Johannes is proud of his horseflesh and showed the writer three big fellows that can walk off with big loads. The lime manufactured by the company is quick-slaking, slow-setting, and takes lots of sand. It is also distributed at 7006 South Broadway and 4401 Race Course Avenue.

#### Improving Their Chain of Plants.

A little more than one year ago the Lowell M. Palmer Company of New York began the construction of what is now considered to be one of the most modern and up-to-date lime-producing plants in the country, at Yorktown Heights, which is located on the Putnam division of the New York Central Railroad, 37 miles from the metropolis. The plant was located by C. J. Curtin, an expert of recognized ability, and the kilns and quarry equipment were all assembled and erected under the personal supervision

of Ambrose Allen, one of the most experienced practical lime superintendents in the East. There are four kilns of approximately 100 barrels a day capacity, and all of the buildings are constructed with reinforced concrete floors and walls of concrete blocks. The elevators and inclines are made of structural steel, and the minimum amount of wood is employed in the construction of every part of the plant. The stone in the quarry at Yorktown Heights is a siliceous limestone which makes a very fine wall plaster, quick-setting and smooth-working under the trowel. They have just completed a most efficient hydrating plant which was installed by the Kritzer Company of Chicago and is giving perfect satisfaction in the quality of the product turned out. Mr. Curtin located this plant after exhaustive core-drilling of the entire neighborhood, and the Palmer company, on his recommendation, secured very extensive quarry property, so that the establishment is provided with raw materials for many years. No expense has been spared to make this plant in every particular as perfect as modern engineering skill and practical experience could suggest.

The Lowell M. Palmer Company also own and operate very extensive lime properties at York, Pa. At this point they have two distinct propositions. One is a lime for the building trade and the other a commercially pure calcium oxide. They have let a contract to the Kritzer Company of Chicago to install a combination plant for hydrating all their lime at York, Pa. It will hydrate both kinds of lime, and they expect to have this plant at York in operation by the middle of August or not later than the first of September of the present season. The Palmer Company have long recognized the possibilities for marketing hydrated lime at the metropolis and in the territory adjacent thereto and are taking these progressive steps to provide the trade with the material wanted.

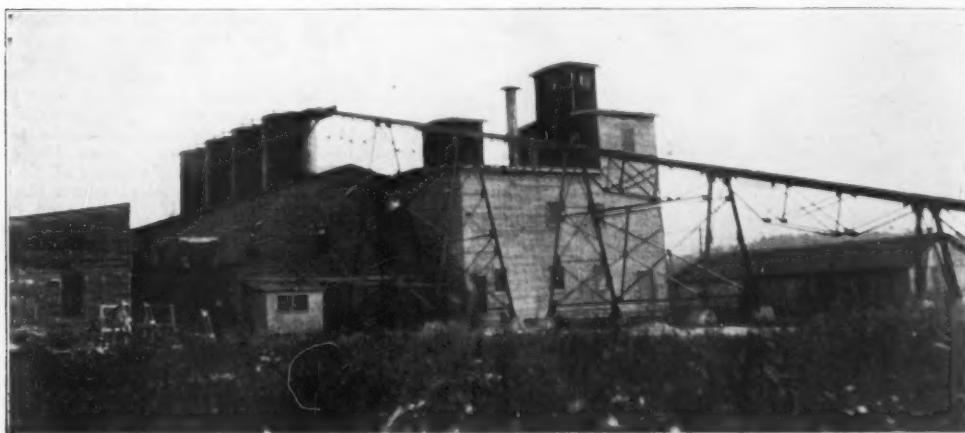
#### Lime Cure for Consumption.

Among the many uses of lime a new one has just come to light. There is every reason to believe that the invention of a Louisville physician and scientist will shortly demonstrate positive cures of consumption. While we have not all the details at the present writing, the system may be roughly described as follows: The patient is placed for treatment in a closed room where a machine is placed that charges the atmosphere with the controlled gases obtained by slaking lump lime. The gas acts directly upon the diseased lung in such a way as to cause the patient to throw off the poison and the diseased part is gradually repaired by natural processes after the cause of disease is removed. Perfectly burned pure calcium carbonate is the desideratum. Even if the cures should not be found to be permanent, as a palliative in every case so far treated it is indisputably successful. Incidentally each patient under treatment requires about a barrel of lime every day. As further particulars are available ROCK PRODUCTS will present them to its readers.

Louis J. Buchheit, manager of the Mitchell Lime Company, Mitchell, Ind., reports that his lime business has been good all through this season.

The Southern White Lime Company has been incorporated at Scranton, Pa., with a capital stock of \$50,000. Incorporators: James J. Lynch, C. S. Littleton, Sydney B. Wright, H. J. Denton and J. L. Johns.

The Eagle Lime Products Company has been incorporated at Eagle, Wis., with a capital stock of \$50,000. Incorporators: Lawrence Fardy, Sr., of Eagle, and William H. Lindwurm, Jr., and Henry Campbell of Milwaukee.



LIME AND HYDRATING PLANT OF THE LOWELL M. PALMER COMPANY, YORKTOWN HEIGHTS, N. Y.



#### CEMENTMAKERS IN SESSION.

#### Regular Quarterly Meeting of the Association of American Portland Cement Manufacturers.

ATLANTIC CITY, N. J., June 11.—The Marlborough-Blenheim Hotel, one of the recent achievements in concrete, was a fitting place for the quarterly meeting of the Association of American Portland Cement Manufacturers held June 8, 9 and 10. The gathering was more in the form of an outing and the business was quickly transacted so that the members could get the benefits of the sea breezes and the surf bathing.

Monday afternoon was devoted to the session of the Association of Sales Managers. This was presided over by Albert Moyer of the Vulcanite Portland Cement Company, with Charles L. Johnson of the Castalia Portland Cement Company as secretary. In view of the fact that there was really nothing in the way of differences to adjust between the dealer, contractor and manufacturer it was rather a social visit among the men on the firing line, each one of whom tried to outdo the other in being a "good fellow."

Monday evening the executive committee of the Manufacturers' Association held a session in order to arrange the general business to come before the meeting on Tuesday. At 10:30 a. m. Tuesday the executive session was held in the east room. The meeting was called to order by President John B. Lober with Percy H. Wilson at the secretary's desk. The reports of the various committees were received, and the sum of practically all the business done was stated in the uniform answers of the chairmen: "Reports progress."

A paper by Edward B. Larned of Boston, bearing upon research work he has recently made, was read. It was also decided that an active campaign in support of concrete in construction uses, in sewer work and manufactured materials of every kind, as well as tile, should be instituted and maintained. Several of the manufacturers stated that they were having tests made on the relative values of concrete construction and that in other materials.

The members were served luncheon at midday while in session, and the meeting adjourned at 5 o'clock.

In the evening the usual banquet was participated in by all the members and representatives of the association.

Harmony seemed to be the keynote of the entire meeting. Some of the daily papers in different parts of the country have made it appear that this was to be a "fight to the finish" meeting, but an entirely different air pervaded the gathering. The opinion was unanimously expressed that better market conditions would soon return with a restoration of confidence in the country's general prosperity.

There was no formal session on Wednesday, most of those present preferring to visit on the broad veranda of the hotel. Some few viewed the work of the Raymond Concrete Pile Company near at hand. This work consists of an extension of the Boardwalk resting on concrete piles. These piles are made "on the job," and are one of the latest innovations in concrete construction.

#### The Attendance.

Alabama Portland Cement Company, Spocari, Ala.—P. H. Moore, general manager.  
Alma Cement Company, Wellston, O.—D. S. Hoover, sales manager.

Alpena Portland Cement Company, Alpena, Mich.—Charles H. Reynolds, treasurer.  
Alpha Portland Cement Company, Easton, Pa.—A. F. Gerstell, vice-president and general manager.

Alsen's American Portland Cement Works—W. P. Corbett, secretary and sales manager, 45 Broadway, New York City; Max Cappus, treasurer.

American Cement Company, Pennsylvania Building, Philadelphia—Robert W. Lesley, president; C. M. Camm, R. E. Griffiths, F. J. Jiggins.  
Bath Portland Cement Company—Charles M. Miller, vice-president, 530 Federal Street, Pittsburgh, Pa.; F. B. Franks, superintendent, Bath, Pa.; Geo. W. Roydhouse, Bath, Pa.

Castalia Portland Cement Company—George W. Hackett, president, Publication Building, Pittsburgh, Pa.; Charles L. Johnson, sales manager and secretary, Sandusky, O.

Catskill Cement Company, Cementon, Ky.—J. W. Kittrell, secretary.  
Chicago Portland Cement Company—Norman D. Fraser, president, 108 La Salle Street, Chicago.

Coplay Cement Manufacturing Company, Pennsylvania Building, Philadelphia, Pa.—W. H. Harding, president.

## ROCK PRODUCTS

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Dexter Portland Cement Company, Nazareth, Pa.—Conrad Miller, president; Joseph Brobston, treasurer.

Edison Portland Cement Company—W. S. Mallory, vice-president, Stewartsville, N. J.; E. Meyer, sales manager, St. James Building, New York.

Samuel H. French & Co.—C. Weber Jones, manager, Fourth and Callowhill Streets, Philadelphia.

German-American Portland Cement Company, La Salle, Ill.—Fritz Warm, president.

Glens Falls Portland Cement Company—George F. Bayle, president, Glens Falls, N. Y.

William G. Hanranft Cement Company, Real Estate Trust Building, Philadelphia—William G. Hanranft, H. M. Fetter.

Helderberg Cement Company, 78 State Street, Albany, N. Y.—F. W. Kelly, vice-president.

Ironton Portland Cement Company—L. C. Steepe, treasurer.

Iola Portland Cement Company—S. H. Tassett, general manager.

Lawrence Cement Company—Ernest R. Ackerman, president, No. 1 Broadway, New York; O. J. Johnson, salesman, Harrison Building, Philadelphia.

Lehigh Portland Cement Company—Harry C. Trexler, president, Allentown, Pa.; E. M. Young, vice-president, Allentown, Pa.

Nazareth Cement Company—A. W. Paige, president, 100 Broadway, New York; M. J. Warner, vice-president; Joseph A. Horner, treasurer and general manager, Nazareth, Pa.; P. H. Hampson, director, formerly treasurer and general manager, Nazareth, Pa.

Newaygo Portland Cement Company, Alpena, Mich.—W. J. Bell, general superintendent.

North American Portland Cement Company, 39 Broad Street, New York—John B. Wight, secretary.

Peninsular Portland Cement Company, Jackson, Mich.—John W. Shove, secretary.

Penn-Alien Portland Cement Company—W. E. Erdell, general manager, Allentown, Pa.; W. R. Yenger, treasurer, Allentown, Pa.; S. G. K. Stradley, sales manager, Allentown, Pa.

Pennsylvania Cement Company—William N. Beach, president, 29 Cortlandt Street, New York; R. E. Bonner, secretary-treasurer, 26 Cortlandt Street, New York.

Sandusky Portland Cement Company, Sandusky, O.—P. B. Beery, sales manager.

St. Louis Portland Cement Company—H. Struckmann, treasurer and manager of manufacturing department, St. Louis, Mo.; A. H. Craney, Jr., sales manager and president, St. Louis, Mo.

United States Cement Company, Bedford, Ind.—E. W. Shirk, president.

Universal Portland Cement Company—Edward M. Hagar, president, Commercial Bank Building, Chicago, Ill.; B. H. Rader, Eastern sales agent, Frick Building, Pittsburgh, Pa.; J. G. Berquist, works manager, Chicago.

Virginia Portland Cement Company, 5 Nassau Street, New York—W. R. Warren, president; D. E. Rianhard, secretary.

Vulcanite Portland Cement Company—John B. Lober, president, Land Title Building, Philadelphia; Albert Moyer, manager, sales department, Flatiron Building, New York City; W. R. Dunn, superintendent, Phillipsburg, N. J.; William D. Lober, secretary-treasurer, Land Title Building, Philadelphia.

Chas. Warner Company, Wilmington, Del.—Chas. Warner.

Western Portland Cement Company, 133 Grand Avenue, Milwaukee, Wis.—George S. Bartlett, vice-president and secretary.

Whitehall Portland Cement Company—Thomas M. Righter, president, Land Title Building, Philadelphia, Pa.; W. C. Kent, second vice-president and secretary, Land Title Building, Philadelphia; Howard B. Green, sales manager, Land Title Building, Philadelphia.

### NOTES OF THE MEETING.

G. W. Roydhouse was among the late arrivals, but was nevertheless most welcome.

Howard Green tried to establish a precedent by wearing a red tie with his evening clothes.

George Bartlett of Milwaukee was busy with the camera. He had it with him wherever he went.

Messrs. Fuller and Matcham of the Fuller Engineering Company were mixing among the manufacturers.

Dana Lincoln of the National Mortar Company, dealers at Washington, "camped on the outskirts," as he termed it.

Charlie Camm and B. H. Rader can afford the luxury of a roller chair on the Boardwalk, and that before the banquet.

Fritz Worm was as happy as if cement were selling at \$2 per barrel. He has hopes that the market will right itself during the summer.

P. H. Moore of the Alabama Portland Cement Company arrived among the early birds, but a telegram early Monday morning called him home.

Two Michigan representatives, Charles Reynolds and W. J. Bell, were on hand, and it is hoped that all future meetings will find them in attendance.

The genuine tan on the countenance of "Billy" Hanranft is of the real sort. It takes a good many days at Atlantic City to get a brown of that kind.

One of the admirable characteristics of Norman D. Fraser of Chicago is that he always has time to return greetings, and until he had made the rounds it kept him busy.

Among the ladies present were Mrs. Yaeger, Miss Yaeger, Mrs. Erdell and Mrs. Franks. They took in the shops along the Boardwalk and enjoyed the cool sea-breezes.

L. C. Steepe of the Ironton Portland Cement Company made this his first meeting, and from the interest he took in the proceedings we judge it will not be his last.

On the veranda, on the Boardwalk, in the sun, taking sun baths in the sand, as well as in evening clothes, genial Kimball of Kent mill fame is a real Beau Brummel.

H. D. Savage of the Ashland Fire Brick Company said this meeting was the first he had attended. He passed out some booklets on the reason why Ashland brick should be used in cement plants.

The life of the banquet, as usual, was the gentleman who has made straight-from-the-shoulder witticisms and criticisms a set feature ever since his entrance into the association—E. M. Hagar.

A few of the old guard were conspicuous by their absence, particularly Pap Prentice of the Crescent, C. P. Jameson and H. A. Schaffer of the Northampton, T. Henry Dumary of Helderberg, D. McCool of Newaygo and Charles Wood of Wolverine.

Richard Humphrey, president of the Cement Users' Association, visited with the cement manufacturers in his usual brief way. He reported progress in the work of the testing laboratory at St. Louis.

Our friend George Emerick is slowly but surely having the merits of his air separator appreciated by the American cement manufacturers, particularly those in the West, where he has been recently.

E. W. Shirk said that this was his first visit to Atlantic City, not having had the pleasure of attending the meetings held here before. The enjoyment he got more than made up for his former absence.

It is a sure thing that the corporation manufacturing talcum powder will pay an extra dividend this season, for D. S. Hoover swears that he used a ton to alleviate the painful irritation of a good old-fashioned sunburn.

Harry B. Warner appeared in a new role at the meeting as the sales manager of the Maryland Portland Cement Company of Baltimore. Well known to all the manufacturers present, Harry was warmly congratulated on all sides on his new position, and there was not one who did not wish him all kinds of success.

Atlantic City, always a world-renowned ocean resort second to none in any country, will very soon take its place among the cities to be cited in cement literature as containing the many successful forms of construction to which cement is adapted. This is evidenced by numerous concrete block residences with clay brick top finish on the line of the trolley to Longport; by gigantic concrete and reinforced concrete hotel structures in Atlantic City proper; by concrete and reinforced concrete piles, most of which have been made under the Raymond concrete pile system, together with the extension of the piers proper, and in many instances the fronts of buildings at the Boardwalk.

### The Universal's New Plant.

On this page we show the first published photographic illustration of plant No. 5 of the Universal Portland Cement Company, which is located on the Union Railroad at Universal, Pa., near Pittsburgh. This is the new addition to the Universal group and came into bearing the early part of the present year.

The plant contains nine kilns 120'x71/2' and has a daily output of 4,500 barrels. The Universal Portland Cement Company is a subsidiary of the United States Steel Corporation, and this plant is operated entirely by electrical power, generated at the Homestead plant of the Carnegie Steel Company and transmitted by high tension alternating current to Universal, where it is transmitted for distribution as required about the plant. The stockhouse in the foreground of the picture is one of the largest in the country, designed to hold 500,000 barrels of cement. The main offices of the company are located in Chicago, and the Eastern sales offices are in the Frick Building, Pittsburgh, Pa., where B. H. Rader, the Eastern sales agent, is in charge of the distribution of the output of this plant. Rock Products recently had the pleasure of a visit at the spacious and elegant offices in Pittsburgh, where Mr. Rader with his chief of staff, Mr. Nelson, extend the hearty Universal welcome. It is a treat to get into that office, which is full of optimism, when there is nothing like that to be found in so many other places. Mr. Rader says: "The plant has been running practically up to capacity since the time it started, and we have kept the product moving out just about as fast as it became available for shipment." And then a smile beamed all over his countenance as he added: "We may have to double the capacity of the plant before long." That is a sample of the courage that is in the system of the man.

The Fuller Engineering Company of Allentown, Pa., have taken the contract for the designing and construction of the Seaboard Portland Cement Company's new 7,000-barrel plant, which is to be erected near Alsen, N. Y.

The plant of the Superior Portland Cement Company, located at Superior, Skagit County, Washington, is rapidly approaching completion. They expect to come into bearing by the middle of July.

The Huron Portland Cement Company's new plant at Alpena, Mich., has made its first cement. The quality is said to be first-class.

The Castalia Portland Cement Company resumed operations at their plant near Sandusky, O., on June 1. Recent orders have been coming in in a manner that surely indicates the improvement of business conditions. All during the recent depression a force of twenty-five men were employed at the Castalia plant making repairs and installing new machinery.

Ground was broken last month for the construction of a million-dollar plant for the Southwestern Portland Cement Company near El Paso, Tex. Carl Leonhard is president of the company. The work of construction will be completed within the year, and before that time the company hopes to win the contract for supplying cement to the great Elephant dam to be erected across the Santa Cruz River ten miles away. The new plant will have a capacity of 2,000 barrels a day.

Contracts amounting to \$850,000 have been let for the enlargement of the Crescent Portland Cement Company's plant at Wampum, Pa. President William J. Prentice says that six new buildings will be erected and the capacity increased from 300 to 3,000 barrels a day. All the new buildings will be of concrete construction, with cement tile roof. There will be a kiln building, 120x200; a raw grinding building, 240x60; a coal pulverizing building, 100x70, and a stock house, 500x70.



NEW PLANT OF THE UNIVERSAL PORTLAND CEMENT COMPANY AT UNIVERSAL, PA.

## ROCK PRODUCTS

## A VIGOROUS NEWCOMER.

## The Ash Grove and Portland Cement Company's New Plant.

A new brand of Portland cement—"Ash Grove"—will be placed on the market in July when the new plant of the Ash Grove Lime and Portland Cement Company, located at Chanute, Kan., begins operation.

The plant is located in the center of the gas fields of Kansas, and in addition to having an abundant supply of natural gas for fuel it possesses many advantages in the shape of perfect raw materials for the manufacture of cement, and peculiarly disposed by Nature for economical manipulation. The site of the factory is an ideal one, being on a knoll, and besides having excellent drainage facilities permits the yard tracks to be laid out on the gravity system, thus enabling all switching to be done without the aid of an engine. The works and yard tracks cover nearly forty acres of ground, and railroad connections are made with both the Santa Fe and Missouri, Kansas and Texas railroads, insuring ample marketing facilities for the finished product. The realty holdings of the company at the millsite comprise approximately 500 acres of land, of which over 200 acres are of a typical cement-making limestone formation.

Construction work was begun last August. The arrangement, construction and operation of the mill represent the best efforts of the Hunt Engineering Company, who are regarded by competent cement men as among the best in this country today. The latest and most improved machinery has been installed in every department. The plant itself comprises a group of six buildings, all built of reinforced concrete and steel, and fireproof throughout. Each piece of machinery is supported on a reinforced concrete foundation resting on bedrock.

The mill will be operated on the semi-dry process, because it was only by that method that cement-making has been made really successful in the Kansas district, and it is the only process which produces a uniform cement of the best quality from the raw material in that field.

The rock will be conveyed from the quarry to the mill by compressed-air hoisting engines, the quarry being opened about 300 feet from the crushing plant. The crusher building is 80 feet square and contains one No. 7 and two No. 5 Gates crushers. There are also two Williams pulverizers in this department, by which the raw shale is reduced. After passing through this crushing equipment the raw materials are stored in large steel tanks having a capacity of 3,000 barrels each. The rock and shale are then conveyed to the drying department, where they are mixed, dried and advanced for initial grinding. The material passes through two 60-foot rotary dryers and is stored in steel bins 30 feet in height and 15 feet in diameter, and fed by gravity into the grinding mills. These departments are housed in a building 159 feet long by 136 feet wide. The material is here ground by 42-inch Fuller-Lehigh mills. This mill is the larger type of the usual Fuller-Lehigh mill and produces results which, with regard to extreme fineness and output, have probably never yet been obtained in other types of grinding machinery.

The material is then elevated to the burning department, contained in a building 192 feet long by 85 feet wide. The material is stored in large steel tanks, where it is thoroughly remixed and chemical corrections made which insure a finished product of a uniform quality that has never been surpassed. It passes from these tanks into five rotary kilns 125 feet long by 8 feet in diameter. These kilns are among the largest built and weigh, when in operation, nearly 400,000 pounds. They are lined with highly refractory firebrick and revolve at a slow rate of speed. The material passes into one end in a continuous supply and out of the other in the form of small, black pellets called clinker. These kilns carry an internal heat of nearly 3,000 degrees Fahrenheit. The fire is maintained by an exact mixture of gas and com-

pressed air, fed to the kilns through a peculiarly contrived burner so as to produce this extreme heat.

The clinker passes from the kilns to the coolers, where it is cooled by draughts of cool air and mixed with a small percentage of gypsum and then passed to the finished grinding building for its final reduction. This department is housed in a building 200 feet long by 47 feet wide. Here the material is stored in twelve steel tanks, 30 feet in height by 15 feet in diameter, each of which feeds by gravity into a 42-inch Fuller-Lehigh mill. This building, as well as the machinery in it, has received much attention from engineers because of the new and novel ideas embodied in its design. The finished cement is transmitted from this department by an inclined belt conveyor to a reinforced concrete warehouse 300 feet long by 105 feet wide, with a storage capacity of 125,000 barrels.

Power for operating the factory is generated by four Corliss engines and two batteries of water-tube boilers, in all representing nearly 3,000 horsepower. Two large concrete chimneys 125 feet in height furnish draught for operating the boilers. Enormous line-shafting is installed, driven by continuous rope drives, which, together with the electrical equip-

managers who made the lime business such a decided success were retained to manage the affairs of the new company. They are: President, W. B. Hill; vice-president, O. J. Hill; second vice-president, J. H. Barton; secretary and treasurer, J. F. Pollock.

The contract for erecting the mill was placed with the Hunt Engineering Company of Iola, Kan. This company is one of the oldest and strongest of the present cement engineering firms. In addition to building two of the earlier mills in Michigan, they built the first Portland cement mill in Kansas, the successful operation of which paved the way for the present cement industry in that State and opened up an entirely new field, which has since become one of the largest cement-producing sections in this country. They have always directed their energies toward the building up of the industry in a legitimate way and have never been identified with any of the "wild cat" propositions which so frequently follow in the wake of successful business enterprises. The president, Leigh Hunt, is regarded as one of the fore-build a 2,500-barrel cement plant.

To accommodate the enlargement of their business a new company was organized, with a capitalization of \$2,750,000, known as the Ash Grove Lime and Port-



RAW DRYING DEPARTMENT AND CRUSHER HOUSE OF THE ASH GROVE LIME AND PORTLAND CEMENT COMPANY.

ment, will transmit the power to all parts of the plant.

Water supply is secured from the Neosho River, where there is located a large pumping plant, working under a pressure of 200 pounds to the square inch, and capable of delivering water to the factory at the rate of 3,000,000 gallons per day. All parts of this plant are in duplicate, and the factory will have water under direct steam pressure at its service all times of the day or night. Settling basins will eventually be constructed and the water will pass through these before entering the plant.

The fuel for operating the mill is supplied by gas wells located on lands owned and leased by the company. They control 5,000 acres of gas lease, and have already developed enough wells to insure a sufficient gas supply for some time to come.

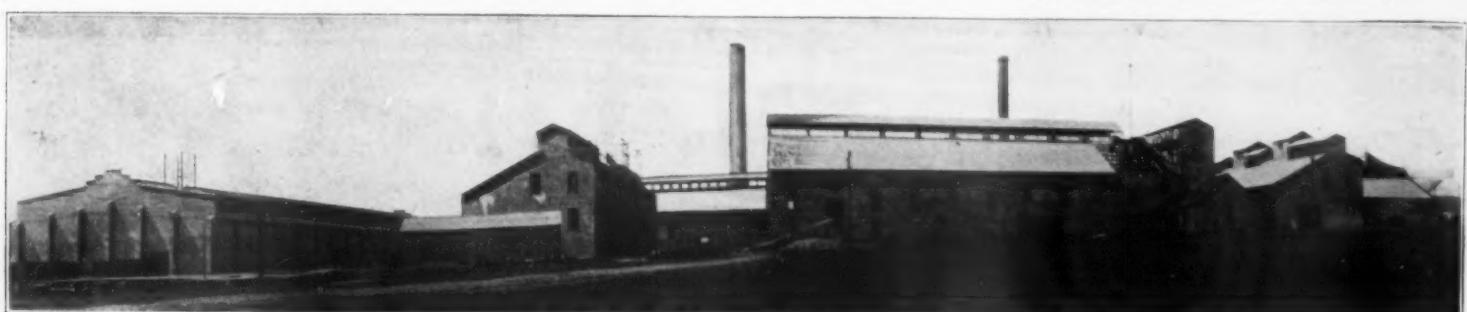
The present owners and operators of the plant, the Ash Grove Lime and Portland Cement Company, were formerly the Ash Grove White Lime Association, organized in 1881 by the present owners, with a capital stock of \$10,000. Under a judicious and conservative management that business grew from an annual output of 40,000 barrels per year to over 400,000 barrels in 1907. Beginning with two small kilns, they now possess nineteen large up-to-date limekilns in five different plants. Their extensive and valuable line of properties in Missouri also includes approximately 800 acres of the best limestone quarries. The original lime-producing company long ago recognized the advisability of undertaking the manufacture of Portland cement and after two years of careful investigation and examination it was finally decided to land Cement Company, with offices in the R. A. Long Building, Kansas City, Mo. All the old officials and

most cement engineers of the present time, and has done much toward the development of the cement industry. The plant of the Ash Grove Lime and Portland Cement Company at Chanute was built under the supervision of L. L. Stone, who has been with the construction company since its organization and who has directed the preparation of the plans and has designed all work in connection with this plant.

The plant of the Detroit and Etna Cement Company at Fenton, Mich., was sold to satisfy a mortgage of \$400,000 to John A. Myers of Boston for \$130,000. Mr. Myers says that a new company will be formed in the East to operate the plant.

The Allentown Portland Cement Company, Allentown, Pa., has purchased 140 acres of cement and limestone property in addition to that already owned, and Charles A. Matcham has been elected a director and becomes general manager of the company. Mr. Matcham has been for sixteen years prominently connected with the cement industry.

The number of cement companies that have put in the Bates Valve bagger is on the increase. It is a great labor-saver alone. It is difficult to get competent men to work on the bagging floor of a mill on account of the dust. By the Bates machine the bags are packed so tightly that they are more easily handled and weights are more accurate. Three men easily handle 1,200 barrels of cement in ten hours. B. E. Arner, head packer of the Lawrence Portland Cement Company, says they recently filled 8,256 bags in two days at a labor cost of one-half cent per barrel. The Penn-Allen Portland Cement Company recently added another machine at their mill,



PANORAMIC VIEW OF THE PLANT OF THE ASH GROVE LIME AND PORTLAND CEMENT COMPANY, CHANUTE, KAN.

## A NOTABLE OUTING.

## Brooklyn Engineers Visit the Plant of the Edison Portland Cement Company.

Profitable instruction and enjoyable recreation formed a most delightful combination on the occasion of the excursion of the Brooklyn Engineers' Club to the plant of the Edison Portland Cement Company last month. Arriving at the New York side of the Twenty-third Street ferry the travelers found Lewis T. Haney, the active and genial manager of affairs, busily engaged in handing out the necessary tickets. To Mr. Haney's energy and enthusiasm, probably more than anything else, is due the great success of the undertaking, for although the day was Saturday the excursionists numbered 138. The final "All aboard!" was shouted about 11 o'clock and in less than thirty-five minutes the train steamed into Orange, N. J., where Thomas A. Edison, accompanied by several officers of the company, stepped aboard.

Approaching apprehension of the pangs of hunger was quickly dispelled by the welcome sight of uniformed waiters, who passed through the train freely distributing ample quantities of various kinds of sandwiches, lobster and chicken salads, ice cream, coffee, cigars and cigarettes. Other important liquid additions to this menu were to be found in confusing profusion in the buffet car.

Employees of the Edison Company passed through the train distributing handsome booklets which contained a brief description of the things to be seen on arrival at the plant. Other employees came aboard carrying huge stacks of linen dusters, thoughtfully provided by the company for the comfort of the guests. These were fitted to the wearers in a manner which would have done credit to a delegation of Fifth Avenue tailors, after which the train proceeded on its way, over the private rails of the cement company, to one of the huge quarries. In passing it is interesting to note that the company's railroad equipment consists of five locomotives and over 200 cars with ten miles of track.

Arriving at the quarry, the entire party, uniformed in dusters, disembarked and watched with great interest the operations there. The Edison Company uses Keystone well drillers in preparing for blasts. These sink a six-inch hole to a depth of 80 feet, and, using about three tons of 50 per cent dynamite, an average of 50,000 tons of rock is displaced at a single blast. Great interest was also manifested in the operation of the two 90-ton Vulcan steam shovels used in loading the stone on skip-cars. The great size of single rocks being handled was cause for wonderment.

Probably the most interesting feature of the plant was to be found in the operation of the giant crushers used in the initial process of manufacturing Edison cement. Stone reaches the head of the crusher house by means of a steep and long incline. Here the skip-load of rock is automatically dumped into the hopper, and immediately there are more fireworks than could be imagined by the most enthusiastic young patriot. The enormous power of these crushers can be better understood when it is stated that they are capable of crushing single blocks of stone weighing up to eight tons. The first or giant rolls, which are 5 feet in diameter by 5 feet long and weigh 25 tons each, are supplemented by three auxiliary rolls situated below, the raw material proceeding from one to the other until it is finally conveyed to the dryer-house in particles of one-half inch and smaller. The power used to operate this mammoth crushing plant, which has a capacity of 250 tons per hour, is furnished by a 500-horsepower vertical cross-compound engine.

In the drying-house the material passes through a vertical dryer, after which it is conveyed to the large crushed-stone storage house, being automatically sampled every minute as it enters the bins. The latter has a capacity of 15,000 tons of rock, sufficient stone to supply the requirements of the plant for seven days, which gives ample time for all material to be thoroughly tested and carefully examined by the

company's chemical experts. The weigh-house, in which all materials are carefully weighed and accurately proportioned by the most approved weighing devices, also proved a point of interest.

From the small rock stockhouse, in which there is constantly kept about 1,500 tons of weighed and mixed material, the party made its way to the chalk-grinding plant, where the rolls used in grinding the small rock were found to be features of exceptional interest. There are five of these powerful rolls, all running at a speed of 200 revolutions per minute and each grinding 200 tons of material per hour. The pressure between the grinding faces is 100,000 pounds, and the rolls are operated by a 750-horsepower vertical cross-compound engine. The matter of lubricating these and similar rolls in the clinker-grinding plant is an important item and a troublesome one on account of the excessive amount of dust to settle on bearings and to make oil-cups impracticable. So the bearings have all been made dust-proof, and pipe-lines have been installed through which oil is pumped and circulated at the rate of 1,000 gallons per hour.

From the rolls the material, which is now principally dust, is carried by the chalk-blower to the blower-house, where thirty-two blowers separate the dust from the tailings, the latter returning again to the rolls for further grinding. The capacity of the blower plant is 140 tons per hour. The material after undergoing this process is of such fineness as to encompass 85 per cent of it to pass a 200 sieve.

The kilns of the Edison Portland Cement Company are the longest in existence, being 150 feet. There are in all ten rotary kilns of this length, each of which weighs 350 tons, but so perfectly adjusted are they that it is but necessary to employ an 18-horsepower motor to operate each. Each kiln has a capacity for delivering clinker equaling 35 barrels of cement per hour, or over 800 barrels every twenty-four hours. The main gear encircling each kiln has a 12-inch face and contains 112 teeth. The kiln-house received considerable attention, owing to the fact that it is a remarkable structure of reinforced concrete members cast on the ground and erected after the manner of structural steel. The roof beams are single monoliths weighing twelve tons each and having a 50-foot span between supports of concrete columns. Upon the beams the roof is placed, which consists of individual concrete slabs 6 feet by 12 feet, by 4 inches thick.

After coming from the kilns the clinker proceeds by conveyors to the first clinker crushing-plant, where two sets of 36-inch rolls are used in the first process of crushing. The partly crushed clinker is stored in two houses which have a capacity for holding 30,000 barrels. The final grinding of the clinker is accomplished by four sets of rolls similar in construction and operation to those used in the chalk-grinding process. There is also a blower system installed in this part of the plant which prevents the introduction of particles below the standard of fineness into the finished product.

Besides the present stockhouses having a capacity for storing 260,000 barrels of cement the company will soon complete a third, which is to be 360 feet in length, 144 feet in width and 30 feet high, with a capacity for storing 300,000 barrels of cement. An arrangement of twelve small bins, each holding 5,000 barrels of cement, will provide ample opportunity for the inspection of cement by the buyers or their engineers before shipment is made. The new building is being constructed entirely of reinforced concrete.

The combined capacity of the packing-houses of the Edison Company is 12,000 barrels per day.

The power plant of the company is modern in every respect. The steam plant consists of two boiler-houses in which are contained eight 500-horsepower Climax and one 500-horsepower Cahall boiler. One of these houses is of reinforced concrete with a reinforced concrete coal trestle. The powerhouse, which is a substantial structure of reinforced concrete, contains three 1,200-horsepower Allis-Chalmers cross-compound condensing engines and three direct-connected 800-kilowatt General Electric generators. The coal-grinding plant has a capacity of 500 tons per day.

A few days previous to the visit of the Brooklyn engineers the plant made its record run, producing a total of 10,800 barrels of Portland cement in twenty-four hours. W. H. Mason, the superintendent, in a talk with the representative of ROCK PRODUCTS, explained that the recent improvements had proved highly satisfactory and that it would be only a short time until the capacity of the plant would be still further increased.

Considerable merriment was caused by the "blowers" used to cleanse the guests after coming from the dusty interior of the works. Eighty pounds of compressed air startled the men of the party, to say nothing of the apprehension felt by the women present. However, after the blowers were used to remove the dust from exteriors, those guests who had suffered considerable inconvenience from dust in their throats



EDISON'S GIANT ROLLS.

were led to the superintendent's office, where it was washed away with the most approved liquid refreshments.

Thomas A. Edison was no less interested than any other member of the party and took great pleasure in making explanations as they were requested. At the superintendent's office some member of the visiting delegation jokingly asked Mr. Edison concerning the effect of mixing Edison Portland cement and whisky, upon which he quickly replied, "My dear sir, it won't set."

## The Attendance.

**GUESTS OF THE CLUB.**—Richard Aukener, transitman, Department of Water Supply, Gas and Electricity, Brooklyn; Percy C. Barney, principal assistant engineer, Board of Water Supply, Brooklyn; Clinton T. Bissell, assistant engineer, Brighton Beach Improvement, Brooklyn; William W. Brush, assistant engineer, Board of Water Supply, Brooklyn; Lincoln A. Burns, secretary and treasurer, Jabez Burns & Sons, New York City; Mrs. William W. Brush, 104 Hancock Street, Brooklyn; Willard T. Chevalier, 102 Kentworth Place, Brooklyn; John Chiusnitzer, 157 East Twenty-first Street, New York City; Frank J. Conlon, assistant engineer, Bureau of Sewers, Mechanics Building, Brooklyn; Wm. T. Donnelly, consulting engineer, 132 Nassau Street, New York City; Mrs. Wm. T. Donnelly, 132 Nassau Street, New York City; John H. Dwyer, chief engineer, Brighton Beach Improvement, Brooklyn; Grade Crossing Commission, 44 Court Street, Brooklyn; William D. Ennis, 72 Columbia Heights, Brooklyn; Lewis T. Haney, 220 Broadway, New York City; Garabed George Heghianian, with Brooklyn Alcatraz Asphalt Company, Kelly Asphalt Block Company and Asphalt Construction Company, as consulting engineer, 407 Hamilton Avenue, Brooklyn; William A. Horton, chemist, Department of Water Supply, Gas and Electricity, 96 Prospect Place, Brooklyn; D. S. Kennedy; George L. Knight, 1032A Sterling Place, Brooklyn; Frederick W. Koop, assistant engineer, Board of Estimate, 491 Fourteenth Street, Brooklyn; Ernest N. McColl, transitman, Bureau of Highways, room 19, Municipal Building, Brooklyn; Chas. W. McInerney, assistant engineer, Public Service Commission, 1504 Amsterdam Avenue, New York City; James W. Nelson, manager, Richard Dodgeon, 82 Broome Street, New York City; James Owen, assistant engineer, designer, Board of Water Supply, 299 Broadway, New York City; Clarence D. Pollock, assistant engineer, Bureau of Highways, Park Row Building, New York City; Walter M. Purdy, assistant engineer, Atlantic Avenue Improvement, 524 Lafayette Avenue, Brooklyn; Richard Lord Russell, chief engineer and superintendent for Charles Cranford, general contractor, 806 Argyle Road, Brooklyn; Jacob Schmitt, 38 South Oxford Street, Brooklyn; Edward F. Schnuck, director, Jabez Burns & Sons, 542 Greenwich Street, New York City; Frederick C. J. Smith, 718 Nostrand Avenue, Brooklyn; Harry B. Snell, principal assistant engineer, Brighton Beach Improvement, 44 Court Street, 315 Lafayette Avenue, Brooklyn; Severy D. Sprong, 34 Jefferson Avenue, Brooklyn; Wesley Steele, 56 Pine Street, New York City; Joseph Strachan, 352 Putnam Avenue, Brooklyn; Robert C. Strachan, assistant engineer, Department of Bridges, Park Row Building, New York City; Marvin W. Strong, 579 East Nineteenth Street, Brooklyn; John W. Wathey, 341 Third Street, Brooklyn; George C. Whipple, consulting engineer, 220 Broadway, New York; Sherman E. White, engineer, Bureau of Buildings, Brooklyn; Lainson J. Wills, 402 West Twenty-third Street, New York City; Mrs. Lainson J. Wills, 402 West Twenty-third Street, New York City; Donato Cuozzo, general contractor and expert in concrete work, 53 Park Row, World Building, New York City; Richard D. Chase, 59 Fourth Street, New Bedford, Mass.; W. F. Stenlitz, Albert Goertz, Edison Aut. E. E. Handel, Alfred D. Flinn, W. B. Fuller, Patrick A. Tracy, James H. Harden, O. Claussner, F. B. Converse, E. M. Campbell, E. R. Van Nardroff, F. W. Huntington, J. H. Williams, H. Cal Plate, Francis B. Pollock, Dan D. Jackson, F. Wood, Q. V. M. Hudson, George H. Shaw, Ed. B. Whitlesey, L. Ed. Berthaune, Angelo Ankener, M. C. Whipple, M. G. Hawkins, Charles S. Launders, N. Barnes Hart, Wm. C. Booth, G. P. France, W. D. Ennis, J. W. Fay, N. M. Jaquish, Wm. J. Hancock, C. W. Wilder.

**GUESTS OF CEMENT COMPANY.**—L. P. Gregory, George Hallett, Clark, John Williams, S. Churchill, E. Meyer, Frank C. Wight, John Howlings, Edwin J. Bengler, W. G. Langford, Fred Roffe, W. D. Kelley, George S. Rice, Thomas A. Edison, W. C. Donald, H. R. Cobleigh, F. R. Upton, Curtis P. Upton, Mr. Betts, M. R. Baldwin, Mr. Johns, A. Thompson, Charles W. Chavot, Jr., W. Weissberger, Jr., R. B. Bloemke, George Baker, Charles V. Grady, Thomas R. McCann, Mr. Hearle, William G. Hoover, William Rawling, L. Brook, Thomas J. Nash, Loyd M. Chapman, Mr. Waiters, Mr. Dougherty, Mr. Weber, Mr. Shaw, Mr. Clarke, H. I. Moyer, Mr. Thatcher, Miss Marion Thompson, Mr. Gilmore, Mr. Wilson, R. H. Thompson, Mr. Byers, T. L. Thompson, Miss M. B. Tomlinson, Miss M. C. Kueck, K. S. Jasper, W. H. Onken, Charles W. Price, C. W. Oberst, F. M. McAverry, George Kaiser, C. W. Parks, George Sykes, Mr. Saxe, Charles A. Miller, Jr., James J. Frawley, B. A. Hawes, W. C. Tobey, Inkerman Bailey, Jr.



THE EDISON CEMENT QUARRY.



### U. S. Gypsum Hollow Tile.

There has probably never been a new material in the building line that has met with such universal recognition and standardization in so short a time as the U. S. Gypsum hollow tile, for fireproof partitions, column protection, wall furring and similar purposes, manufactured by the United States Gypsum Company, Fireproofing Department, 1123 Broadway, New York.

After a careful investigation into the subject of fireproofing in general, and extensive experiments with calcined plaster as applied to this purpose, the United States Gypsum Company constructed in 1904 a thoroughly modern and up-to-date plant at Gypsum, O., for the manufacture of this material on an extensive scale.

Upon the completion of this plant early in 1905, the company secured the services of G. Lester Williams, for many years connected in an official capacity with the Metropolitan Fireproofing Company of New York, and established its present fireproofing department in New York City, with Mr. Williams as sales manager.

Notwithstanding the optimistic views which governed the company in the construction of the Gypsum, O., plant, the first six months after its fireproofing sales force took the field served to demonstrate the inadequacy of the original factory to handle the enormous volume of business that poured in upon it, and in the fall of 1905 ground was broken at the company's Oakfield, N. Y., plant for a second fireproofing factory, which covers over 60,000 square feet of land and is the largest factory of the kind in the country. This plant began operating in the spring of 1906, but, despite its enormous capacity, the company again finds itself in the position of seeing its sales surpassing all expectations, and plans are now being considered for the erection of a third factory, to be located at one of their Western plants. Construction of this plant will probably be begun as soon as the revival in general business shall have progressed sufficiently to warrant the resumption of extension work.

In perfecting its formula the United States Gypsum Company, after analyzing every so-called plaster block that had ever been upon the market, turned its back upon precedent and proceeded along the line of pure plaster, without the addition of large quantities of ashes, wood pulp and fiber, chips, excelsior or other foreign substances of a like nature. They discovered that the economy that could be effected in the use of these fillers (displaying a corresponding percentage of plaster) was more than offset by the resultant waste through breakage, retention of moisture and generally unsatisfactory results produced, and after lengthy experiments in selecting and calcining rock they adopted their present formula, which is 98 per cent pure calcined gypsum, and produces a tile that, while the lightest first-class fireproofing material on the market, possesses as great a crushing strength as burned clay, eliminates practically all waste through breakage, and yet can be nailed into, and cut through with an ordinary saw.

In fireproofing qualities the U. S. Gypsum tile has yet to meet its equal. Terra cotta or clay tile, which was the original form of fireproofing in this country, and is still widely used, possesses the quality of being fireproof in the sense that it is incombustible. Its great disadvantage, however, is due to the fact that when subjected to extremely high temperature it will, if hard-burned, become red-hot, or, if porous, will fuse, in either case affording but slight protection to the metal it covers, or from the communication of sufficient heat to the woodwork of an adjoining room to cause ignition. When the water is applied to it during a fire, the hard-burned clay will crack and fly or the porous will disintegrate.

On the other hand, the U. S. Gypsum hollow tile will not only successfully withstand the highest temperature to which it can be subjected, but it effectually prevents the passage of practically all warmth. In the official fire test of this material for the Bureau of Buildings of New York, held in November, 1905, the inside of a 3" hollow block partition was subjected to a fire lasting over one hour, at a temperature of over 1,800°, and the average temperature of the outside of this partition (only 3" away from the flames) was only 124°. In other words, less than 7 per cent of the tremendous heat inside succeeded in communicating itself to the outside surface of the block, and the bare hand could be held against it without the slightest discomfort at any time during the test.

At the expiration of the hour, a stream from the nozzle of a regulation fire-hose, at full pressure, was

turned against the inside surface of the partition for two and one-half minutes, after first extinguishing the fire to prevent the loss of any force from the stream of water by condensation. The only result was the washing off of about  $\frac{3}{4}$ " of the surface of the tile that had recalcined. Not a joint was started, the partition remained perfectly plumb and true, and had this impossible fire occurred in a building all that would have been necessary to restore the partition to its original condition would have been replastering on the inside surface. The outside coat of plaster was intact.

The foregoing is all included in the official report of the test published by the United States Gypsum Company, in an attractive booklet entitled "The Crucial Test."

In addition to its superiority in fireproof qualities, and its economy in reducing waste to a minimum, the U. S. Gypsum tile forms the most rigid partition than can be used. This is due not only to the area of each block (2½ square feet) and the fewer joints



U. S. GYPSUM HOLLOW TILE.

in consequence, but because of the fact that when laid up in a mortar composed of gypsum cement and sand, a bond is secured between the tile and the gypsum in the mortar that it is impossible to duplicate in the use of any other two materials. The same result is accomplished in plastering the tile with hard plaster.

On account of the area of this tile, and its extraordinary lightness in weight, it can be erected at considerably less cost per square foot than the old-fashioned terra cotta or clay tile, and as it is entirely free from irregularities or warping it requires much less plaster to finish.

In addition to its many other advantages the U. S. Gypsum tile is the most remarkable non-conductor of sound on the market. It is being extensively used in buildings devoted to musical purposes, perhaps the most notable of these being the new Wanamaker Building, Philadelphia—D. H. Burnham & Co., architects. It was used exclusively throughout this immense structure, particularly for separating the innumerable music-rooms from each other.

Among the hundreds of prominent buildings where the U. S. Gypsum tile has been used throughout for partitions, etc., are the Connors Hotel, Joplin, Mo.; Quarantine Hospital, North St. Louis; First National Bank Building, Vicksburg, Miss.; Denechaud Hotel, New Grunewald Hotel and Baroness Improvement Company Building, New Orleans; New Battle House, Mobile, Ala.; Malott Hotel and Theater, Indianapolis; Textile Building, Cincinnati; Majestic Building, Detroit; Stambaugh Building, Youngstown, O.; Statler Hotel, Buffalo; Seneca Hotel, Rochester; Phelps Publishing Company Building, Springfield, Mass.; Bradley & Tyson Building, Boston; Marlborough Apartment House, Baltimore; Raleigh Hotel and Freedmen's Hospital, Washington; Masonic Temple, Raleigh, N. C. In New York City their list of prominent buildings furnished is so large that the consumption of the U. S. Gypsum tile in the metropolis can be best grasped by the round figures of over 1,000,000 square feet annually.

A distinctive feature of the United States Gypsum Company's Fireproofing Department that has probably contributed in no small measure to its success is its erection organization. This is probably the largest and certainly the most skilled force of men for handling this class of construction work that can be found anywhere in the country. In addition to the constant supervision of the sales manager this branch of the fireproofing department is managed by a capable general superintendent, who has under him assistants for the various territorial divisions of the country, and under these assistants are the job foremen. While local mechanics are, of course, always employed, the nucleus of the organization on any job, irrespective of location, is composed of skilled masons who have been in the company's employ for years and have been selected by a constant system of observation and elimination.

### Compact and Up-to-Date.

FORT DODGE, IA., June 11.—The plant of the Iowa Hard Plaster Company here is one of the newest plants at the great hard wall plaster center of the West. Their brand, which is well known to the trade, is called "White Rock." In point of equipment this mill is one of the best, as no expense was spared in the purchasing of the machinery. Economy in the handling of the product was the prime factor in the building of this plant. Its arrangement is compact, and there is no delay from the time the raw material enters the mill until the finished product, ready for the trade, comes out weighed with mathematical accuracy. Special care is given to the grinding and mixing of the materials. Chemical tests are made of all materials, and the results are never left to doubt. It is this care which has been used in the preparation and handling of the material that has given "White Rock Plaster" its reputation. It has been used in some of the largest buildings in this country and has always given general satisfaction.

### New Industry for Montana.

MISSOULA, MONT., June 1.—The Montana Hard Wall Plaster Company, organized recently by Helena and Butte parties, expect to commence operations in their mill for the manufacture of cement plaster before the end of July. The mill will be situated on Belt Creek, near Great Falls, and the plant when completed will represent an investment of about \$15,000. The company have secured possession of over fifteen acres of gypsum along Belt Creek. The rock is said to lie in a solid mass on the surface and to be thirty feet in thickness. A. L. Firpo of Butte has charge of the erection of the mill.

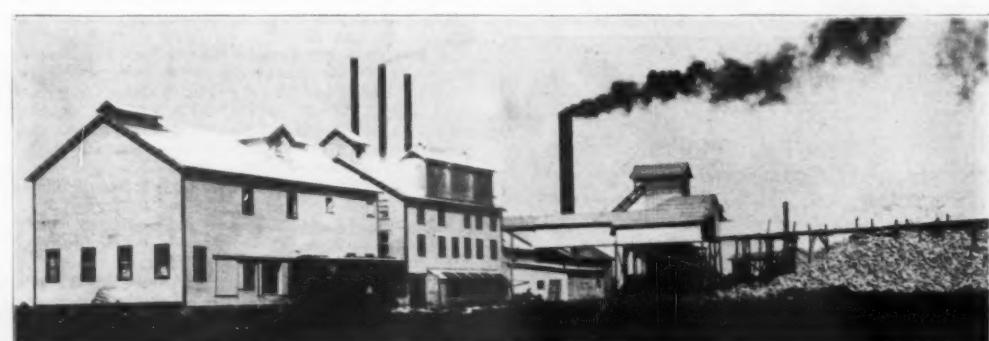
### Plaster Mill Planned for Nevada.

SALT LAKE CITY, UTAH, June 9.—The Utah-Nevada Plaster and Cement Company will soon begin the construction of a mill which they say will ultimately have a daily capacity of about 200 tons. The mill will be built at the company's gypsum deposit in Nevada, near Las Vegas.

The company owns about 200 acres, upon which a blanket vein of gypsum of exceptional purity, more than a mile in length and with an ascertained thickness of 45 to 50 feet, has been developed. The deposit parallels the main line of the San Pedro, Los Angeles and Salt Lake Railroad, and is distant from the railroad one to three-fourths of a mile.

The company was organized a short time ago by John Sharp, W. V. Rice, State Treasurer James Christiansen, Secretary of State C. S. Tingey, John N. Sharp, C. O. Whittemore, C. H. Tingey and William McClary of Laramie, Wyo.

A charter has been issued to the Plaster Products Company, Hampton, Va., capitalized at \$25,000. G. W. Rowe is the president; S. C. V. Spartley, vice-president; G. A. Howard, secretary and treasurer.



PLANT OF THE IOWA HARD PLASTER COMPANY, FT. DODGE, IA.

# QUARRIES

## The Good Roads Movement.

Howard H. Gross of Chicago, United States road expert and secretary of the Farmers' Good Roads League of Illinois, is probably doing more today for the promotion of good roads than any other man in this country. Good roads is his one ambition, and for fifteen years he has studied the subject from every standpoint, visiting many countries and making exhaustive inquiries. He has spoken before many bodies and has written more on the subject than any man living today. He says that no country is so rich in wealth and poor in roads as the United States. His articles on the subject have been published all over the country. When the *Saturday Evening Post* wanted an article on the subject they were referred by the United States Government to Mr. Gross, and he prepared a story which was read by the millions of readers of this paper, and letters are still coming in from all over the world regarding it. He has started a campaign which will be far-reaching in its benefits. The time will come when every State legislature will vote an appropriation for good roads, and possibly the United States Government itself may be prevailed upon to make a national appropriation. Recently Mr. Gross called on William H. Taft and found that the Secretary of War was heartily in favor of good roads. He was instrumental, through Mr. Taft's assistance, in having a plank regarding the subject inserted in the Republican platform. Mr. Gross has also been asked to prepare for the Democrats a plank even broader and more comprehensive in its scope and which will include a national appropriation.

The readers of *ROCK PRODUCTS* are vitally interested in the subject of good roads, as it has a direct bearing on the stone-crushing industry. Good roads mean prosperity for the farmer and prosperity for the crusher man. Mr. Gross will shortly prepare an article for *ROCK PRODUCTS* on the subject.

## Daily Capacity of Twenty Cars.

Charles J. Selvage has purchased the plant and quarry property at Callahan Station, east of Louisville, Ky., on the old narrow-gauge railroad. The plant is equipped with a No. 4 Gates crusher with screen for making four separations and has been running steadily all the season with a daily capacity of about twenty cars of crushed rock. He has an open-face quarry, with about 600 feet of exposed siliceous limestone at an elevation of 55 feet. Mr. Selvage remarks that the call for small-size concrete stock is a feature of the business, although they are constantly taking orders for ballast and macadam. His stone crushes very clean, so that the fine screenings are sharp and well suited for concrete work, with just enough dust in the run of the fine stuff to make good concrete aggregate.

## Look for Increased Business.

NEW ULM, MINN., June 10.—W. C. Miller, manager of the New Ulm Stone Company, reports that conditions in this vicinity along the line of stone products up to this time have not been anything to brag about. "We have been getting considerable small orders," he said, "which we filled mostly from stock, as we ran our crushing plant only about one week during the past season. We look for an increase in the crushed stone business before long, but we do not think it will be as favorable a season as we had last year, judging from the appearance of things at this time. We are looking for a fair business, however. Labor conditions would be very favorable in this section this season in almost any line, so that conditions would be fine to do much business, and this we hope will soon show up."

## World's Longest Auto Road.

WORCESTER, MASS., June 16.—The Hassam Paving Company of Worcester have been awarded the contract to build a sixty-mile stretch of road on Long Island for the Vanderbilt cup races. This is the largest paving contract ever made in the United States. It requires that ten miles be completed by October 1.

Capt. W. E. Hassam, general manager of the company, recently completed a sample stretch of road at the summer home of W. K. Vanderbilt, and on this

won the larger contract. He said this noon that he could complete a ten-mile stretch before October 1, and expects to begin work at once.

The money involved in the contract is said to include millions. Twenty-five carloads of crushed stone will be used daily, and the work on the ten-mile stretch will give employment to 2,000 men all summer.

The road to be completed this summer will be 22 feet wide and will be a portion of a roadway 100 feet wide. There will be fifty bridges in the sixty-mile stretch. The entire road will be free from crossings, the road to be constructed either over or under every railroad and street. The road will be from Minneola to Ronkonkoma, with a three-mile turn at the end, so that automobiles can have a long swerve at the end of their runs.

## To Construct Many State Roads.

WILKES-BARRE, PA., June 9.—State Highway Commissioner J. W. Hunter and his assistant engineers have been considering the feasibility of building State roads connecting the county seats of the sixty-seven counties of the State, and the probabilities are that a bill providing for that improvement in the public highways will be introduced at the next session of the State Legislature.

Thousands of miles of roadway will be built if the plan as proposed is endorsed by the Legislature. Members of the Legislature will be asked to make the appropriation for the fiscal year beginning June 1, 1909, \$5,000,000. The appropriation for the year just begun was \$2,000,000 for the entire State.

The showing as made in this district alone, where twenty-six miles of roadway have been built at the average cost of \$10,000 per mile, would signify that the plans as made by the State Highway Department have been taken advantage of all through the State.

## Overwhelmed with Orders.

PIQUA, O., June 20.—The Statler Stone Company of Piqua, O., have recently moved their main office from 402-406 Union Trust Building, Cincinnati, O., to Piqua, O. This move was chiefly made necessary by the increasing demand for the special products of this enterprising concern. The manager in charge reports that the plant was kept running during every hour of last winter when the weather would permit and is now simply overwhelmed with orders. Most of the present orders on hand are for delivery in the Cincinnati trade, but the local market is also constantly improving.

The material produced by the Statler Stone Company is of standard quality for both macadam roads and all kinds of cement work. It also fills a large demand for private driveways and for the walks and drives in parks and cemeteries. They also produce a special grade of fine material averaging somewhat less than  $\frac{1}{4}$  inch in size that has proved very satisfactory when used in the place of sand. It would seem that this grade of crushed stone not only shows up much handsomer in color, but it also has a greater tendency to fill voids. They are also in position to furnish pure white marble dust for use as a finishing coat for all classes of concrete work. In other words, the Statler Stone Company seem to be a nervy lot of boosters who have no complaint to make in regard to the hard times, except that prices in general have a tendency to be lower than last year.

## Gas Made Out of Limestone.

ST. LOUIS, June 10.—Charles H. Rider of this city has invented a new illuminant and source of motive power, which, if all that is claimed for it is true, will drive all the existing methods of gas-production out of the market and eventually throw all the steam engines of today, as well as the gas and electric light plants, onto the junk-heap. Mr. Rider, who is a St. Louis chemist, says that this new gas can be sold to consumers at a large profit at 3 cents per thousand feet. The city of St. Louis has already adopted it for its motive power.

The materials from which the gas is made are limestone or any other mineral carbon, and dried grass, dead leaves, sawdust or any other organic carbon.

Officers of the United States Steel Corporation and of the Welsbach Mantel Company have obtained a lease of the United States rights on a royalty basis, and the first plant to be erected on a large scale is being put up by the city of St. Louis to operate and light the municipal waterworks plant.

The discovery of the limestone-dried grass method of making gas was an "accident," or rather an incident of Professor Rider's laboratory work. This was in March, 1907. The Professor was at work on a problem which had to do with the smelting of

nickel and cobalt ores. As one of the fluxes in his smelting experiments, the chemist used limestone. He was impressed with the great reducing power evidenced by the limestone.

"It occurred to me," said he, "to use limestone as a means of producing heat by combining it with an organic substance in such a way as to cause a mutual reaction between the carbon of the organic substances and the carbon and oxygen contained in the limestone, thus producing carbon monoxide gas, which is well known to have a heating power of 1,400 degrees when burning in air."

The retort devised by the inventor is made entirely of fireclay. It has a feeding apparatus on one side, so that just the right amount of material is placed into the retort each time. On the other side are doors for the abstraction of the burned lime. The retorts are inclined, sloping toward the doors through which the burnt lime is removed. And it is this lime that helps to make the discovery of such tremendous importance commercially.

"It takes about three hours to make the gas," says the Professor. "Ten tons of limestone mixed with 1,800 pounds of charcoal or other organic substance will produce 150,000 to 160,000 cubic feet of gas, the furnace consuming one ton of soft coal or its equivalent in gas for heating during the distillation process. The gas thus generated, used in an engine operating a dynamo, will generate approximately 4,000 kilowatts of electricity, for which the average consumer now pays 12 cents a kilowatt, or a total of \$480 for electricity equal to the amount generated from ten tons of limestone.

"Now, at the same time there is produced more than five and a half tons of pure burnt lime, of a finer quality than that for which the city of St. Louis now pays \$4.65 a ton, or \$25.57 for the amount which is the by-product of my ten tons of limestone.

"The raw material for this gas and lime making may be any mineral carbonate, such as limestone, dolomite, malachite, azurite or the like. The organic carbon used may be charcoal, straw, cornstalks, dry weeds, leaves, bark, sawdust, wood, oil waste, etc. The proportion of mineral and organic carbonates is about 90 per cent of the former and 10 per cent of the latter."

Busch & Percival of Kenmore, N. Y., have started paving Eugene Street in that village.

The Pulaski Crushed Rock Paving Company has filed notice in the office of the Secretary of State at Little Rock, Ark., that they have dissolved.

Walter S. King, with the Sturtevant Mill Company, has won a deserved promotion. He now represents his company at Pittsburgh, with temporary headquarters at the Hotel Lincoln.

H. H. Wilson and W. S. Barr have organized the De Soto Concrete Company and will engage in the manufacture of concrete blocks, columns, tile, etc., at 218-228 East Mallory Avenue, Memphis, Tenn.

The Board of Supervisors of Erie County, N. Y., has decided to advertise for bids for a stone crusher at the almshouse in Buffalo. Bids will be received by Clerk Frank B. Steele until 11 o'clock on Tuesday morning, June 30.

The Dalton Stone Company at Hopkinsville, Ky., have a daily capacity of forty carloads of crushed stone. Their payroll amounts to \$10,000 a month, and a large portion of this output is being used for railroad construction.

The Scioto Stone Company, which operates a large quarry and stone crusher near Arlington, O., resumed operations last month. The company has contracts with the Baltimore and Ohio and will also deliver material for furnaces and mills.

The United Bluestone Quarries Company has been incorporated in New York City. Capital, \$100,000. Directors: Joseph Hayes, 18 Wall Street; James B. Laux, 11 Broadway, New York; Arthur S. Hubbard, 885 Lake Street, Newark, N. J.

It is reported from Marquette, Mich., that crushed rock suitable for cement work is being sold by the village of Laurium to contractors and others at the rate of \$1.50 per load. The village buys it from the Calumet and Hecla Mining Company.

At a recent meeting of the Board of Supervisors of Binghamton, N. Y., a resolution offered by Supervisor Edwards that the New York State Engineer be requested to use trap rock on the county's good roads wherever the specifications call for such, was unanimously adopted.

The Bellevue quarries of the Breakwater Construction and Engineering Company, Wilmington, Del., have been put in operation. The plant, when running full, is expected to turn out 30,000 tons of stone weekly, the material to be used in building a large breakwater near Cape May, for which the company has the contract. O. L. Tunis of Baltimore has charge of the work.

## FROM OUR OWN CORRESPONDENTS

### PHILADELPHIA.

PHILADELPHIA, Pa., June 18.—It seems to be the universal belief that when the present political tumult shall have subsided prosperity will reign again in the land. Already is there an earnest of the forthcoming change for the better in a very perceptible liveliness in cement quarters. Though orders are spasmodic, the volume of business is showing up fairly well. An important movement on the part of the railroads, which are asking for bids on contemplated extension and construction work, has greatly encouraged the cement men of late. It is also noticeable that the administration of this city will do considerable bridge building from now on. Cement stocks in dealers' hands continue below the normal, and the hand-to-mouth policy in buying is still persisted in in the hope of being able to make purchases at a still lower figure than present quotations, which, unfortunately, on account of the deplorable practice of price-cutting, are very unsatisfactory.

The firebrick industries are benefiting from the growing improvement, and their representatives are decidedly optimistic as to outlook. The sand, lime and other building supply lines have felt keenly the effect of the great diminution in construction work during the recent months, and though there is some work of a kind always on the boards, the volume is far from satisfactory. Dealers, however, are hopeful of an active fall business.

Philip S. Vollmer, Philadelphia representative of the Atlas Portland Cement Company, 1210 Fidelity Building, is much pleased over June showing so far. He reports that inquiries are being made, and that he has booked some fair orders of late.

The Alpha Portland Cement Company, 910 Harrison Building (Henry Longcope, sales manager), is unperturbed over conditions. Mr. Longcope recently returned from a business trip to Cuba. He reports business running along fairly well.

William Henry Longcope, father of Henry Longcope, died on May 22, at the home of his son in Lansdowne, Pa., at the ripe age of 85. Henry Longcope has the sympathy of his many friends and business associates.

H. B. Green, sales manager of the Whitehall Portland Cement Company, 1720 to 1724 Land Title Building, reports the volume of business coming on all right, and regards the outlook encouraging. Mr. Green is pleased over the way their new waterproofing has been received by the trade.

The Vulcanite Portland Cement Company, 1230 Land Title Building, report business brightening up somewhat, and that they feel much encouraged over the outlook.

The Edison Portland Cement Company, Arcade Building (J. T. Wakeman Philadelphia representative), state that they have been getting quite an increase of orders during the last few days. They feel that better times are surely on the way.

William B. Irvine, president of the Knickerbocker Lime Company, 366 North Twenty-fourth Street, and one of the best authorities on building supply lines, reports business only fair. Mr. Irvine states, however, that there are signs unmistakable of a better state of things in the near future.

The P. H. Fairlamb Company, lime, cement, sand, etc., 115 South Thirtieth Street, report that though trading on the whole has been rather slow, a slight improvement is noticeable of late.

The E. S. Bortel Company, roofing supplies, Eighteenth and Market Streets, report an increase of orders recently.

The Henry S. Spackman Engineering Company, 42 North Sixteenth Street, state that business has been only fair during the last few months, but that work is coming in now, and a better feeling is growing as to the outlook.

The Cyrus Borgner Company, firebrick and clay retorts, Twenty-third above Race Street, admit the general sluggishness of business of late, but Mr. Borgner looks for early and continued improvement.

The Philadelphia Firebrick Works, 2306 Vine Street, report business keeping up fairly well. They look for good fall trading.

The Holmesburg Granite Company, 112 North Broad Street, are getting out considerable crushed stone and so preparing for good business during the wind-up of the season.

The regular meeting of the Engineers' Club was held on June 6, Dr. H. W. Spangler in the chair.

There was a goodly attendance and papers were read by H. S. Righter and Myron H. Lewis. The death of Carl Lieb, active member, which occurred May 17, was announced. Dr. Henry Leffman read a memoir of the death of L. Y. Schermerhorn. The following members were elected: Henry De Huff, Cynwyd, Pa.; Herbert Hollick, Camden, N. J.; Thomas Love Latta, 3819 Spruce Street, active members. Walter Cornelius Autcott, Germantown; Amos B. Engle, 1213 South Fourth Street, and Robert Frank Runge, West Collingwood, N. J., junior membership. James G. Biddle, Wallingford, Pa., associate membership.

The Chicago Concrete Machinery Company have opened an office at 911 Rothschild Building, which will be in charge of Henry T. Pierce.

It was recently announced that the cement bids for Panama for furnishing 4,500,000 barrels of Portland cement, were opened on June 1 at Washington, D. C., and showed as follows: Lehigh Portland Cement Company and the Alpha Portland Cement Company of Allentown, Pa., joint bid, delivered at Colon, \$8,212,500; delivered at United States ports, \$6,412,500. E. J. Duggan, 1133 Broadway, New York, delivered at Colon, \$7,830,000. The Santa Cruz Portland Cement Company of San Francisco, delivered on dock at Portland, Ore., \$6,243,750. The Atlas Portland Cement Company, New York City, delivered on dock in United States, \$5,355,000.

William Steele, one of the best-known builders of this city and head of the extensive building concern of William Steele & Sons Company, died on May 19 in his 70th year. Mr. Steele has been actively engaged in building and construction work since 1864.

George A. Sorber, aged 50 years, a well-known contractor and builder, died on May 27.

On May 28 a rule was granted by Vice-Chancellor Leaming in Camden, N. J., to show cause for the appointment of a receiver for the Camden Granite Brick Company, and to prevent the company from disposing of its property to the Sand Lime Company.

The Industrial Engineering Company was incorporated under New Jersey laws on May 26; capitalization, \$10,000.

The roofing business of the late Charles A. Cole was incorporated under New Jersey laws on June 1, under the name of the Charles A. Cole Company; capital, \$10,000, with Mrs. Annie D. Cole, the widow, and Matthew Zimmerman of Camden, and Mary E. Dubree of Philadelphia incorporators.

The Star Realty and Building Company, Pittsburgh, Pa., was granted a charter under Pennsylvania laws on June 8; capitalized at \$25,000; F. L. McCullough.

The Asphalt Paving and Contracting Company, Wilmington, Del., was chartered under Delaware laws on June 9; capital, \$10,000.

The Panama Portland Cement Company, New York City, have increased their capital stock from \$1,000,000 to \$2,000,000.

The property of the Buckhorn Portland Cement Company, which has its head office in the Real Estate Trust Building, is to be sold by Robert A. Patton, the receiver, on June 19. The sale will take place at the company's plant at Manheim, W. Va.

Ballinger & Perrot invite bids for a modern printing building, 117x126, six stories and basement, for Edward Stern & Co., Inc., to be erected at the northeast corner of Seventeenth and Vine Streets, extending to Pearl Street. The columns, floor and roof will be reinforced concrete, fireproof construction, with flag roof covering. The wall will be of gray brick, with granite base course and Indiana limestone and terra cotta trimmings.

Rankin, Kellogg & Crane are preparing plans for a five-story rear addition of brick and concrete to the United States Marine Corps Quartermaster's storehouse, Broad Street and Washington Avenue.

William Steele & Sons Company have plans from Jury & Kessler, architects, for a four-story fireproof mill, 49.6 by 244.6 feet, at Riverdale, N. J., for W. H. Taubel.

Oliver H. Perry, architect, is preparing sketches for a Colonial residence to be erected on the line of the Reading Railroad, near Elkins Park. The owner's name is withheld for the present. The house will be constructed of stone foundations and brick walls above, plastered and pebble-dashed. Sanitary plumbing, hot-air heating, electric and gas lighting and open fireplace of stone with cut-stone trimmings.

J. M. Bastress & Co. will build a one-story brick and concrete foundry and storehouse, 70 feet by 120 feet 6 inches, at 3501 Rhawn street, for the American Manganese Bronze Company, at a cost of \$20,000.

Plans by J. Herbert Hall, architect, have been posted for estimates on the boards in the Builders' Exchange for a new chemical laboratory building at the Pennsylvania State College at Bellefonte. It will be built of concrete blocks, will be three stories and an attic in height and will measure 140 by 73 feet.

### THE PITTSBURG DISTRICT.

PITTSBURG, June 18.—There has been marked improvement in building and construction circles throughout the entire Pittsburgh district during the past month, and the increase in the amount of cement used has been correspondingly great. The local cement companies generally report that inquiries are now more plentiful than at any other time this year. There are some good contracts being handed down in this vicinity, many of which call for the use of large quantities of concrete. There are also many new projects coming up right away.

I. U. Stahl, of Latrobe, Pa., has been awarded some fine contracts for cement paving in that city, one stretch being almost 1,000 feet in length. He has also received the contract for laying several hundred feet of similar walk on St. Clair Street and Summit Avenue, Ligonier, Pa.

W. H. Roberts of Carnegie, Pa., who for a number of years past has owned and operated extensive limestone properties in the vicinity of Slippery Rock, Butler County, Pa., has disposed of his entire holdings to the Climax Lime and Stone Company of Pittsburgh. There is a large and well-equipped plant on the properties, and the new owners have taken charge of their purchase and will operate the quarries and plant to capacity. The company has some large orders on hand for crushed limestone, which is to be shipped at once to Allegheny and Westmoreland Counties, where there is a large amount of new macadamized road construction under way. The price paid for the property was \$45,000 cash.

The Alpha Portland Cement Company, German National Bank Building, Pittsburgh, has received the award of the contract for the cement to be used this summer in the work of constructing the navigation passes at Wheeling, W. Va. The contracts for the construction of these passes were both awarded to the T. A. Gillespie Company, Westinghouse Building, Pittsburgh, and are two of the best concrete contracts that have been awarded this summer. The first contract, or that calling for the construction of 700 lineal feet of navigation pass at Dam No. 8, Ohio River, amounts to \$308,619, and is the larger of the two. The specifications as prepared by the United States Engineers call for the following quantities: 25,000 cubic yards of excavation, 1,920 cubic yards of fill, 1,030 cubic yards of base for concrete, 6,030 cubic yards of concrete, with which will be used 52,000 pounds of reinforcing bars, 73,200 pounds of structural steel, 433,000 pounds of forgings, 246,000 pounds of iron castings, 82,500 pounds of steel castings, 98,000 pounds of bolts, etc. There will also be 25,000 lineal feet of round piles and 293,000 feet of sheet piles. The contract for the other pass amounts to \$279,000 and calls for 18,100 cubic yards of excavation, 1,620 cubic yards of fill, 11,200 cubic yards of riprap, 1,030 cubic yards of base for the concrete, 6,030 cubic yards of concrete, with which there will be used 52,600 pounds of reinforcing rods, 433,000 pounds of forgings, 73,200 pounds of structural steel, 246,000 pounds of iron castings, 82,500 pounds of steel castings and 98,000 pounds of bolts, etc. There will also be 31,200 lineal feet of round piles and 293,000 feet of sheet piles. This latter pass will be built at Dam No. 11, Ohio River, and the contract for this was also awarded to the T. A. Gillespie Company. The work on both is to be rushed to completion as rapidly as possible.

The announcement was made the latter part of last month by the Juniata Water and Waterpower Company that plans have been completed for the construction of a second plant, including another large storage and power dam, between Huntingdon and Lewistown, Pa. The company but recently completed the first plant, which is located in the Warrior's Ridge Gap a few miles above Huntingdon, Pa., and proposed extending the system as soon as the contracts can be awarded and the plant started under way. The company has headquarters at both Tyrone and Altoona, as well as at Huntingdon, all three of these cities being supplied with power from the plant already in operation. The new dam, like the present one, will be constructed entirely of concrete and reinforced concrete. It will have a capacity of several hundred million gallons, and will be built across the Juniata River. S. L. Brumbaugh of Huntingdon, Pa., is at the head of the company.

Bids will be received in a short time by the City Engineer of Erie, Pa., for the erection and construction of a pair of concrete arch culverts which will be built over Mill Creek at Second and Third Streets. Each of these culverts will cost in the neighborhood of \$5,000.

Local dealers in building supplies report that there has been no material change in the volume of their business the past four weeks. The larger houses are particularly busy, and although there are not many large building projects this year, this loss is more than made up by the increased number of smaller business buildings and residences. The demand for

building brick, tile, lime, plaster, etc., is particularly good just now.

The Trussed Concrete Construction Company of Detroit and Pittsburg has received the award of the contract for the new theater at Boyerstown, Pa., to replace the one destroyed by fire some time ago, when so many persons lost their lives.

The contract for the reinforced concrete bridge that will be built this summer on South Limestone Street, Milton, Pa., has been awarded to the Ferro-Concrete Company of Harrisburg, Pa., at \$7,500.

At Renovo, Pa., it has been decided to build a large new reservoir with a capacity of 3,000,000 gallons. The new reservoir will be built in Drury's Run about a mile above the present reservoir, and will be 400 feet long, 100 feet wide and 16 feet high at the breast. The entire breast will be of concrete, and the lining will be of the same material. Work will be started this summer. The Mayor is chairman of the board.

The State Water Supply Commission, Harrisburg, Pa., has awarded the contract for the large concrete retaining wall that is to be built this summer at Bridgewater, Beaver County, Pa., to C. M. Driver, of Pittsburg, for \$21,454. The wall will be built along the Ohio River.

The Good Roads Machinery Company, through the Pittsburg office, has sold a large new stone crusher to B. F. Moore and Walter Cooper of Swarts, Pa., and the machine is being installed at the limestone quarries of these gentlemen in Washington County. This vein of limestone is from 10 to 20 feet in thickness, and is being used throughout the county in the improvement of roads. The contractors in charge of this road construction have placed sufficient orders for crushed limestone to keep Moore & Cooper busy for the remainder of the summer.

The Columbia Works of the Pennsylvania Glass Sand Company, located at Bridgeport, Pa., and which have been closed down since last March on account of the lack of orders, have resumed operations. The Empire Works of the same company have partially resumed. The other two plants of the company, located at Mapleton, and known as the Mapleton and Keystone Works, have both been running full. While these plants have been closed down, many needed repairs were made, and the crusher jaws replaced.

#### THE TWIN CITIES.

MINNEAPOLIS, MINN., June 20.—The season is developing better than might have been expected, in view of the various things which offer a hindrance. The business situation is by no means as clear as could be hoped for, although the Northwest seems to be perhaps in better shape than any other section.

Building permits for May in Minneapolis ran behind those of a year ago, the figures being \$1,506,950, a loss of over \$100,000. St. Paul ran a trifle over, making a gain of less than \$2,000, the current year showing \$891,499.

The Engineers' Club of Minneapolis recently had a meeting at its new quarters with the Builders' Exchange, and listened to an illustrated address, the stereopticon being used, on the manufacture of cement, by W. H. L. McCourtie of the Northwestern States Portland Cement Company of Mason City, Ia.

M. K. Sawyer, who was for a number of years with the Perfection Block Machine Company of Minneapolis, has become associated with the Northwestern States Portland Cement Company of Mason City, Ia., and will travel for them in Minnesota. He will make his headquarters in Minneapolis.

F. W. Kinney, a practicing architect of Minneapolis, recently retired from practice to take up other endeavors, but soon found that the early love was too strong and is back again in architecture.

The Minneapolis Builders' Exchange held a house-warming party at the new rooms, 17 South Sixth Street, May 27, when 200 members, friends and invited guests inspected the rooms, enjoyed the cigars and listened to a brief program. The evening was a very pleasant one and wound up with a buffet luncheon. Guests were present from the St. Paul and Duluth exchanges. June 10 the exchange gave a second party in honor of the wives and sisters and daughters of its members. This was the first affair at which the ladies were bidden, and the innovation proved a great success.

A. J. Blix, a successful architect of St. Cloud, Minn., has removed to the larger field which is available in Minneapolis, and has opened an office in the Temple Court Building.

Brick manufacturers of Minnesota and some from adjoining States met again in Minneapolis June 10, in accordance with the arrangement at the meeting held in May, and heard reports of the committee on permanent organization. At this meeting the temporary organization, with George W. Higgins of Minneapolis, president, and Rufus P. Morton of Brickton, Minn., secretary, was made permanent.

Another meeting is called for August 12, in Minneapolis, at which time several papers will be read and discussed, among the subjects being the relative values of sand-lime and clay bricks, and also the most economical modes of burning brick. In view of the doing away with the wood fuel to a large extent in the Northwest, the question of economy of firing is a most pertinent one, since the compulsory use of coal for direct firing or in the shape of producer gas, is coming closer and closer. Some yards have already had to turn to it, owing to the scarcity and excessive cost of wood, and others will have to very soon.

I. H. Edmonds will erect an apartment building at 1917 Aldrich Avenue South, three stories and basement, the exterior to be of hollow concrete blocks. It will be 50x75 feet and will cost about \$15,000.

The Davis Construction Company received the general contract for an addition to the Longfellow School building, to cost \$20,850. R. J. Cheney & Co. were successful for the Grant School at \$22,889, and E. J. Davis for the Harrison School.

O. O. Whitted will erect a reinforced concrete residence on Eagle Island, Lake Minnetonka, on plans by W. S. Hunt, architect. Cost, \$10,000.

C. E. Bell, architect, is completing plans for a handsome courthouse building to be erected at Green Bay, Wis. The plans will be ready for bids very soon now, and bids will be taken until September 23. The building will cost about \$225,000.

#### CLEVELAND.

CLEVELAND, O., June 19.—A more favorable showing has been made in Northern Ohio during the past month than for any similar period since the panic of last fall. Conditions are fast resuming a normal appearance, and while prices of materials are still low and promise to continue so, money is much freer than it has been and some large projects have been launched.

Building supply concerns complain of the general slump in prices and are fighting keenly for business. Cement is still ranging around the \$1.60 mark for small lots, though big jobs are getting it much more cheaply than that figure. The call for Portland is the main feature.

Public buildings are redeeming the building situation in Cleveland. During the month several of importance have been announced, including a twenty-room school, a new public library branch, a monster bridge, a new chemical laboratory for Western Reserve University and a number of apartment and store buildings. The volume of residence building is said to be heavier than a year ago at this time. Cheap materials and low-priced labor are succeeding in dragging at the purse contents of many who desire homes of their own.

A project calling for the use of immense amounts of concrete and cement is the elimination of grade crossings. This agitation commenced a year or two ago and is to be actively pressed hereafter. The Belt Line, a new road encircling the city, is to cross a number of residential streets 20 feet or so above grade, and will span the thoroughfares with handsome concrete structures.

The D. C. Gries & Walker Company have been awarded the contract for the erection of the new West Side library branch, their bid of \$69,500 being the lowest. The structure completed will cost about \$75,000, which sum has been donated by Andrew Carnegie. The building will be triangular in shape, and will have concrete floors and brick walls, with terra cotta trimmings. The Library Board will next month award another contract for a new branch for the South Side, costing about \$40,000, money for which will also be provided by Mr. Carnegie.

On June 12 the cornerstone was set for the new chemical laboratory for the Western Reserve University. The building will be 112x70 feet and three stories high. Buff Indiana limestone trimmings will be used on red brick walls. The interior construction will be of concrete and steel. It will cost \$116,000 completed. The mason contract is held by J. Worth Smith.

Contracts have been let for the construction of the twenty-room Mayflower school building. It will cost \$81,000. Concrete and steel construction will be used, with brick walls. The Reaugh Construction Company got the contract for the concrete and mason work.

One of the most interesting announcements of the month is that work is to proceed at once with the erection of a new six-story all-concrete building at the intersection of Euclid Avenue and Huron Road, to cost \$135,000. Foundations will be set for three extra stories. The structure will be the second all-concrete building in Cleveland. This new flatiron block will have an exterior finish of concrete. The general contract for the work has been let to the Carey Construction Company and the Carey method of reinforcing will be used. Excavating is now in

progress. It is hoped that the building will be finished early next winter. The structure will have a frontage of 125 feet on Euclid Avenue and 136 on Huron Road. The basement will be fitted up as a rathskeller and restaurant. All rooms will have outside frontage. At the point there will be a width of 12 feet, while farther back it will extend to 75 feet.

The Upson Nut Company of Cleveland have let a contract for a new "mass concrete" dock to the Great Lakes Dredge and Dock Company for \$70,000. This will be the third or fourth all-concrete dock of considerable size built in Cleveland within the last year or two. The dock will be built in two sections. One will be 325 feet long and 15 feet wide, while the other will be 550 feet long. Oak piling, four rows wide, will be driven, on which the concrete will be massed. It will be constructed in step-like form, the highest step being at the water's edge. The intervening space will be filled with slag and later covered with concrete to keep out moisture. Frazer & Fox are the engineers on the job. The proportions in the concrete to be used will be 1:3:6. It is calculated that 45,000 barrels of cement will be used.

A mammoth new concrete bridge is to be built across Rocky River at the western border of Cleveland. It will have the largest concrete arch in the world. The bridge will be 50 feet longer than the Walnut Lane bridge in Philadelphia, the main arch having a length of 708 feet. The main span will be 288 feet in length. The bridge, which will rise to a height of 94 feet above the river, will have a 40-foot roadway, with 8-foot sidewalks on each side. No steel will be used in the main arch, but the adjoining work will be reinforced. The bridge will rest at each side against solid shale banks. There will be five 40-foot spans at each end of the main arch. The estimated cost of the bridge is \$266,000. Contracts will be let within the next month.

President Du Pont of the new 3-cent street railway company in Cleveland has invented a new concrete and steel tie. He became convinced recently that the wooden ties had ended their days of usefulness and got busy in finding a substitute. Attached to the rails is a steel T-beam 3 inches deep. Around this is dug a trench 6 inches deep and 18 inches across. This trench is filled firmly with concrete. When it hardens thoroughly there is a perfect tie of concrete and steel. It is proposed to use the new tie on all construction work in Cleveland henceforth.

John Pierce & Co., general contractors for the finishing of the interior of the new Postoffice, have given the contract for a large amount of cement flooring and interior concrete work to J. H. Libbey. There will be 23,300 square feet of floor in the basement and 108,000 square feet of concrete filling for the floors above the basement. The value of the contract exceeds \$10,000. The general contractors are now busy installing the tile partitions. Thousands of tile are being utilized in the work.

#### LOUISVILLE.

LOUISVILLE, KY., June 19.—It is generally conceded that this will be an off year in the building industry, which of course includes all kinds of concrete work and building materials generally. There is a small increase shown in the general demand, though this has not been as great as there was reason to expect. There are some good contracts being let, but these are not frequent. Cement is moving nicely, however, and there is considerable activity among the mills in this locality.

General building supplies are not as active as they might be, and there does not appear to be any great amount of construction work in prospect this season. The low price of both materials and labor does not prevent people from holding off until there is a change in the general situation.

J. B. Speed & Co. have incorporated with a capital stock of \$30,000. The directors are: J. B. Speed, W. S. Speed and Henry S. Gray. The company will act as selling agent of the Louisville Cement Company and will also sell lime, plaster and salt. They report doing a good business and look forward to a steady improvement in general conditions.

The Kosmos Portland Cement Company are rushed with orders for cement. They are operating their plant to its capacity and are making arrangements to increase the output. Mr. Horner, of this company, has gone east for a few weeks' stay.

The Louisville Cement Company find conditions very fair. They feel that the future is hopeful for the concrete industry.

The Utica Lime Company say that the demand for both lime and cement has been somewhat irregular. They are doing a fair business, but not as large as they had looked for.

The National Concrete Construction Company say they have not received any new contracts in the last few weeks, but as they have a large amount of work in hand they are not idle by any means.

The Southern Roofing and Paving Company are still busy on concrete work out of town. They have enough contracts on hand to keep them busy for several months. In the roofing industry they are not as busy as they would wish, but manage to keep things moving.

The Central Concrete Construction Company say that there is about a normal amount of work on hand at the present time. They have some work under way and have enough orders to keep their plant in continual operation.

John S. Cully finds the demand for concrete blocks about all that he could look for now. He has some nice contracts on hand and is figuring on more all the time. He has lately secured considerable out-of-town work.

The Globe Concrete Company are doing a fair business in both block work and flat work. They are figuring on more work all the time, and have no fault to find. They have been able to keep things on the go since they began operations.

The National Roofing and Supply Company are doing a fair amount of concrete work, and have also a number of roofing contracts on hand that give them something to think about these times.

The Holmboe Company are not doing a great deal in the concrete industry now, but are rushed with other lines of engineering work, so that they have about all they can look after at the present time.

The Samuel F. Troxell Company are reasonably busy on roofing work, and manage to keep things going.

The Standard Roofing and Paint Company have been awarded the contract for furnishing the composition roofing for a number of the buildings at the State Fair in this city.

The Byrne & Speed Coal Company have branched into the river sand industry and have erected two storage plants here. One of them is located at Fourteenth Street and the river and the other at Brook Street. They already have a number of contracts, and are well pleased with the outlook.

The Ohio River Sand Company say that they manage to keep things on the go, but that there is not a great demand at the present time. John Settle, the manager, has been away on a business trip.

The Nugent Sand Company find a fair demand for river sand and gravel, and do not feel that there will be any lessening in the near future.

The Kentucky Wall Plaster Company are operating both their plants now, and have enough orders to make things quite interesting.

The Atlas Wall Plaster Company say that there is small complaint to make on account of lack of business. They have been contemplating doing something in the way of improvements at their mill, but they have been too busy to make them.

The Southern Brick and Tile Company say that there has been a good demand for both brick and tile in the past month, and that they are keeping busy now, with prospects encouraging.

The P. Bannon Sewer Pipe Company note an increase in the call for sewer pipe and have begun to get down to business in earnest.

The Kentucky Firebrick Company, of Haldeman, Ky., find an increasing demand in this locality for their output. They are operating their plant on full time.

The Kentucky Vitrified Brick Company are getting busy on street brick now and are sending their product to many sections of the country. They report a decided increase in the past few weeks.

The Louisville Firebrick Works say that the demand for firebrick has opened up again and that the indications look favorable. They are operating their plant on full time.

The Burrell & Walker Clay Manufacturing Company say that conditions with them are not as brisk as they might be, and still they are doing something all the time.

The Winchester Brick Company, Winchester, Ky., are now beginning to push their sand-lime brick in this locality. They are looking forward to a good demand.

The many friends of Clifton Stacy Hall, of this city, will be grieved to learn of his unexpected death, which occurred on June 4, at 4:30 a.m., at his home in Beechmont. Mr. Hall had been in poor health for several months, having had several serious attacks from ptomaine poisoning. He had recently returned to this city after a short stay at Dawson Springs, Ky., where he had sought to recuperate his health. His death was directly due to Bright's disease. Mr. Hall was thirty-two years old and leaves a wife. He came to this city several years ago from Cincinnati, and had been prominently identified with the concrete industry, having completed a number of large contracts here. He was a civil engineer, and had gained a reputation for work in this special line.

# CHICAGO

CHICAGO, June 20.—If ever there was a time to build it is now. With building materials as cheap as they have ever been, labor plentiful and strikes out of the question, there is every inducement for builders to get busy. The banks and loan companies are offering money at reasonable rates and specially advise investors to put their money into buildings.

In his annual summary for the year ending April 15, Building Commissioner Joseph Downey reports, in part, as follows:

"In the number of permits issued for the erection of new buildings there is a decrease of 1,240, or, approximately, 11 per cent, while the falling off in the estimated valuation of new construction work is \$4,195,555.

"This decrease I consider comparatively slight in view of the fact that the cost of material and labor during the year 1907 reached a point higher than ever before. In addition to this the financial crisis through which the country passed toward the close of the year 1907 caused almost a complete suspension of the building industry. The extent to which this crisis affected the building lines is best illustrated by a comparison of the period most affected with the same period of the preceding year. In November, 1906, there were issued 760 permits for the erection of new buildings at an estimated cost of \$4,615,300. In the same month in 1907 we issued 496 permits, the estimated cost being \$2,205,150, a falling off of 34 per cent in the number of permits for new work and upward of 50 per cent in cost.

"I take great pleasure, however, in reporting that this line of business has completely recovered, and the first quarter of the year 1908 compares very favorably with the same period of the year 1907.

"Notwithstanding the fact that for two months or more there was comparatively very little new work begun, the volume of building operations in the year covered by this report exceeds those of every year in the history of the city, with the exception of 1892 (the year immediately preceding the World's Fair year) and the years 1905 and 1906."

R. T. Crane will build, at 158 Lake Shore Drive, a residence on which he expects to expend \$150,000. He has had Shepley, Rutan & Coolidge prepare the plans and has let the general contract to the Warren Construction Company.

The Chicago Dock and Canal Company, 34 Clark Street, have taken out a permit for a six-story warehouse, 470 by 118, to be constructed at 538 Illinois Street. It is to cost \$425,000. Architect C. A. Eckstrom prepared the plans, and the contract has been let to H. Erickson.

A building for the Chicago and Northwestern Railway has been moved to Carroll Avenue and Canal Street and will be occupied by them. It is a five-story warehouse 100 by 150 feet. A concrete foundation will be put under it. The contract for this work has been let to the William Grace Company.

Alterations to the extent of \$50,000 will be made in De Jonghe Bros.' restaurant, 45 East Monroe Street. D. H. Burnham, architect, made the plans. The contract for the work was awarded to Mortimer & Co.

The Independent Packing Company will make extensive additions to their plant at the Stock Yards. Reinforced concrete will enter largely into the construction. Architect Z. T. Davis has charge of the work.

J. & B. Moos, cigar manufacturers, will erect a five-story building, 80 by 165 feet, at 535 Wabash Avenue. It will be of reinforced concrete construction with brick and terra cotta exterior. The cost will be about \$110,000. The architect is S. N. Crowen, and the general contract has been awarded to the Alling Construction Company.

The Otis estate, owners of the property at Jackson Boulevard and Dearborn Street, will erect a fifteen-story building, 50 by 70 feet. It will cost about \$400,000. The architects preparing the plans are Holabird & Roche, Monadnock Block.

Hasterlik Bros., wholesale liquor dealers, will erect a four-story building, 100 by 166 feet, to cost \$75,000. It will be of reinforced concrete with pressed brick exterior. Architect H. L. Newhouse prepared the plans.

Work on the buildings for use of the Corn Products Company at Summit, Ill., is now under way. There will be about 800 buildings in all, including the manufacturing plant and the residences of the employees. Most of these latter will be rough-coat exterior and will average about \$2,000 each. The Arrow Construction Company, 167 Dearborn Street, has the general contract.

Manufacturers of hollow concrete blocks are making strenuous efforts to have the fire underwriters give them a lower rate on concrete block construction. The insurance men insist on them taking the same rate as iron-clad frame buildings, though the block manufacturers ask for the rate on brick buildings. It is claimed by the underwriters that until a standard for mixing and manufacturing concrete blocks is established their quality is so varied that no general reduced rate can be authorized.

Albert Moyer, sales manager of the Vulcanite Portland Cement Company, was a Chicago visitor this month.

"Buster" Brown, sales manager of the Elk Cement and Lime Company, was met on the street the other day by a ROCK PRODUCTS man. He was hustling, as usual. He says that he has moved his office from Milwaukee to Grand Rapids, Mich. Among the large contracts where Elk cement will be used is public work at Marinette, Wis., and the buildings of the Paper Mills Company at Green Bay, Wis.

Limestone screenings, when dustless and free from impurities, are to be on an equal footing with torpedo sand in specifications for street paving in Chicago hereafter. After an acrimonious discussion, conducted entirely by the advocates of the screenings, who oppose the stand of the Board of Local Improvements for sand exclusively, the report of the special committee in favor of screenings was adopted by a vote of 61 to 2 at a recent meeting of the City Council. Just before the vote was taken an amendment was introduced, approved by President Dietrich of the board and adopted by the council, specifying that—whether screenings or sand be used—the material must be "free from dirt, dust and other impurities." This reconciled many of the aldermen to the report, and the long fight which has delayed public improvements in Chicago for many weeks was ended.

Immediately after the vote had been announced Alderman O'Connell moved that all the improvement ordinances which have been held up in past weeks be sent back to the Board of Local Improvements, so that they may be redrafted and provision made for either screenings or sand in their specifications.

The report of the Board of Local Improvements stating its reasons for opposing screenings cited thirty-three authorities, including D. H. Burnham & Co., Jenney, Mundie & Jensen, Rudolph S. Blome and Gen. William Sooy Smith, against screenings, and seven—Holabird & Roche, George W. Jackson, W. H. McGovern and the William Grace Company among the number—giving it an equal preference with sand.

"The argument by the Board of Local Improvements that a certain wall at Chicago and Milwaukee Avenues with a screening composition has caved in has about as much weight as if a man from New Orleans should come to Chicago on a rainy day and therefore argue that it always rains in Chicago," declared Alderman Pringle, chairman of the special committee which presented the report in favor of screenings. No one but a very narrow-minded person would consider such an isolated case as proof. Scientific experiments are not conducted in that way, and our committee has taken typical cases and found that the vast preponderance of testimony is that screenings are good."

An amendment that either sand or screenings, before being accepted, must be washed or air-blasted was introduced by Alderman Fisher.

"The United States government tests on which this report is based were made with clean screenings," said Alderman Fisher.

Alderman Foreman then took a hand in the argument and had struck out the words "washed or sand-blasted," leaving it optional as to how the material is cleaned. The altered amendment was then carried by acclamation.

Before a vote on the report could be taken Alderman Snow got the floor for a scathing arraignment of the Board of Local Improvements. He declared that eight of the thirty-three persons named in favor of sand were minor employees of the local board and that, with possibly two or three exceptions, none of them had any knowledge of the subject.

"Mr. Minwegen told us that 2,000,000 yards of paving is done annually in Chicago and that using screenings will save 5 cents per yard, which means \$10,000 to the property owners," he declared.

"Mr. Minwegen tells me he never made such a statement," replied Alderman Foell. "Was it made to the committee, and is it in the record?"

"It was made to me privately, but possibly others in the committee heard it," answered Alderman Snow.

"Mr. Minwegen says the possible saving could not be more than half a cent per yard," concluded Alderman Foell. "We have had no evidence here to show that there is a sand monopoly or that there is a difference in cost in the materials and I think the committee makes a serious mistake in criticising the board."

C. H. Wood, sales agent of the Wolverine Portland Cement Company, says that he notes an increase this

month in sales. The dealers are, however, buying in small quantities.

Among the work in concrete for the improvements in the city of Ottawa, Ill., the Chicago Portland Cement Company will furnish the cement for the sidewalks. About 10,000 barrels of Double A will be used for the sidewalks.

Fred Hulbert, building material dealer of Green Bay, Wis., was in Chicago last week.

I. V. Vincent, of Hamilton & Vincent, dealers in builders' supplies at Ottawa, Ill., was in Chicago recently in the interests of his firm. They will supply the cement for the sewer improvements and will use about 5,000 barrels of Marquette.

The Chicago, Indiana and Southern Railway will build a reinforced concrete bridge across the Depue River on their line. The contract has been let to W. P. Ijans of Cleveland, Ohio. Six thousand barrels of Marquette cement will be used in the construction.

The Sugar Creek Lime and Cement Company are one of the latest to enter this market with lime of their own manufacture. They burn the Sugar Creek brand, a lime of calcium nature. Their plant is located at Browns, Ind., near Clinton, on the line of the C. M. & St. P. The officers of the company are: J. H. Jones, president; N. B. Streit, secretary; J. B. Rubly, treasurer, and S. B. Wringer, general manager. Besides selling their own lime they handle cement, lath, stucco, etc.

The Cady Stone Company at Moline, Ill., have put in a No. 3 crushing plant, furnished by the Power and Mining Machinery Company of Aurora, Ill. They will crush the slag from the furnaces there for commercial purposes and if successful will later on install a larger crushing plant.

Meacham & Wright are now comfortably located in their large and commodious offices and take considerable pride in showing visitors through. The offices are handsomely furnished and a model for a business of this kind.

#### THE WEST COAST.

SAN FRANCISCO, CAL., June 17.—The rebuilding of San Francisco is still progressing at a rapid rate, although there is not a great boom at present. There is a very healthy growth, and, judging from the numerous announcements of new buildings in plan, there would be a boom if there were more Eastern money available. During the month of May 598 building permits of a total valuation of \$2,709,731 were issued by San Francisco's chief inspector. This shows a slight increase over the figures for April.

In Portland, Ore., many dwellings are being constructed. Several large business structures are nearly completed and three more are in plan. The building inspector of Portland issued in May 372 permits, with a total valuation of \$754,825.

In Los Angeles, Cal., 558 building permits with an estimated valuation of \$830,320 were issued for May. There were 589 permits issued in May, 1907, valued at \$1,005,605. Despite the apparent loss there is substantial activity throughout the city. Building has reached a total value of \$3,622,733 for 2,927 permits since the beginning of this year.

In Seattle, Wash., 939 building permits, representing an investment of \$1,004,312, were issued in May. For May, 1907, there was a total of \$933,870, and 825 permits, and for April, 1908, 1,123 permits, of an estimated value of \$705,875.

There has been no particular increase in the prices of building materials. Lumber is still remarkably low, which is favorable for reinforced concrete construction work, as the lumber required for the wooden forms for a good-sized building is a large item. Cement is still plentiful and comparatively cheap.

Arrivals of foreign cement have not been heavy during the past month. Prices of European Portland cement are from \$3 down at wholesale. The production of domestic Portland cement at California plants has increased somewhat, although they are not yet running at their full capacity. Prices are low, ranging around \$2 per barrel f. o. b. San Francisco. The revival in concrete construction work continues in this city, and it is unlikely that cement prices will drop.

Among the notable buildings now under construction is the five-story reinforced concrete wholesale store which is being erected by the Healy-Tibbitts Construction Company for the exclusive use of Tillmann & Bendel, on the northwest corner of Pipe and Davis Streets. The foundation of the building, which is about 100 feet square, rests on piles.

The Clark Construction Company has almost completed the walls of a four-story reinforced concrete store building on the northeast corner of Grant Avenue and Union Square Avenue, with a frontage of 25 feet.

Tosy & Zucco, construction engineers, have almost completed the walls of the new reinforced concrete building for the Banca Italiana at the intersection of Montgomery Street and New Montgomery Avenue.

When completed the new structure will present a very fine appearance with its high arched doorways, etc.

The contract for the reinforced cement work on the new \$500,000 Tourist Hotel, which is to be commenced at once in Stockton, Cal., was let May 27 to Von der Horst Bros. of San Francisco and Boston for \$99,400, the hotel company to furnish all of the cement, which it purchased recently when that material was at very low figure. A slightly lower bid was rejected.

The new nine-story Williams Building is nearing completion on the north line of Geary Street, between Stockton and Grant Avenues. It is a very handsome specimen of steel frame and concrete construction with reinforced concrete floor arches. J. A. Baumann is the contractor and Laudsburgh & Joseph are the architects.

The American Pacific Construction Company has made good progress in the erection of the new California Market, which is to cost \$100,000. It is a reinforced concrete Class B structure, extending through the entire block from Pine to California Street 136 1/2 feet west of Montgomery.

The U. S. A. Construction Company is manufacturing the concrete blocks which will be used in the two-story building being erected at Winnemucca, Nev., for the use of the M. B. Johnson cigar factory.

The Morton Company, which recently established a brass foundry near Bay Point, Cal., has completed a concrete reservoir with a capacity of 300,000 gallons.

The Board of Public Works of Oakland, Cal., after discussing at length plans for the improvement of the banks of the estuary leading to Lake Merritt from the Eighth Street bridge to the Twelfth Street dam, finally adopted a resolution recommending that the City Council enter into a contract with the Oakland Traction Company for the delivery of the rock with which the work is to be done. The clerk of the board was instructed to advertise for bids for a rock crusher to be placed in the quarries for the crushing of rock to be used in street work.

The Board of Public Works has received bids for erecting steel mill buildings for a city cement plant at Aqueduct Station, Kern County, California.

Los Angeles capitalists who are to build a million-dollar cement factory at El Paso, Tex., received word yesterday that ground had been broken for the plant. Carl Leonhardt, the contractor, is president.

H. M. Brittain, manager of the San Juan Cement Company, recently visited Hollister, Cal., on business connected with the plant. Mr. Brittain says assurances have been given by the Stanislaus Power Company that its power line will be completed to the cement plant by January 1. All the heavy machinery is at the plant ready for installation, and Mr. Brittain says everything can be gotten in readiness in five months' time. The company will resume building operations about August 1, and by the time the power line is completed the cement mill will be ready for business. The cement company has developed several good oil wells at Santa Maria, and consequently is assured of plenty of fuel whatever may happen. It is the intention of the company to extend the San Juan Pacific Railroad to Hollister and also to tidewater at Port Watsonville.

According to advices from Box Elder, Utah, H. C. Baker of Ogden has succeeded in organizing a company with New York capital, in the sum of \$1,000,000, called the Wasatch Portland Cement Company, and it is proposed to expend \$600,000 in building a plant on the west edge of Lake View Ranch, with a daily capacity of 1,500 barrels.

Bids were opened June 2 by the Isthmian Canal Commission for 140,000 barrels of cement to be used on the Panama Canal. There were twenty-five bidders, among whom were the San Francisco Portland Cement Company and the Pacific Portland Cement Company of San Francisco. The bids ranged from \$1.28 to \$1.84 per barrel delivered at Colon. The terms and conditions were complicated, so that no award will be made for some time yet.

The Rocky Mountain Portland Cement Company, launched by the aid of considerable Spokane capital, is preparing to operate in the Crow's Nest district in British Columbia and market its product in Spokane, Wash. The company will have its plant located near Blairmore, B. C., about thirteen miles from Crow's Nest Mountain. It is understood that fully \$160,000 worth of bonds of the company, a \$300,000 issue, will be taken up by Spokane capitalists. The headquarters of the company will be located at Blairmore and a branch office established in Spokane.

The plans of the West Coast Portland Cement Company provide for the erection of their plant at Lewiston, Idaho, instead of at the properties on the upper Snake River. If the project is carried out as outlined work on the plan will begin inside of ninety days.

According to advices from Anacortes, Wash., reports indicate that before many months have passed a third big cement plant will be located in Skagit

County. Minneapolis capitalists have been interested in the immense deposits of lime rock in the vicinity of Van Horn, and engineers are on the ground looking the project over.

#### ST. LOUIS.

ST. LOUIS, Mo., June 19.—Lower prices for lumber, cement, plumbing and other material have stimulated business in the building line. After a long season of inactivity some of the railroads have recently been buying cement. The City Comptroller last week awarded \$5,500,000 worth of the \$10,200,000 public improvement bonds. It is an emphatic indication both of the credit of the city and of the great amount of surplus funds seeking investment that the bids aggregated more than six times the amount of the bonds offered.

Plans are under way for the erection of a modern office and store building at the corner of Chestnut and Tenth Streets. The lot is 60x100, and the building, six stories in height, will cost \$100,000.

The fourth of the branch libraries, to be erected at Eleventh and Farrar Streets, for which the design of Mariner & La Beaume was accepted, will be a modern treatment of the Renaissance, while the fifth, in number, to be built after the design submitted by Hellmuth & Spiering at Seventh and Soulard Streets, will be of a new type of architecture adapted especially for the purposes for which the building is intended.

Quarry property is in demand in St. Louis territory. Louis S. Krainka recently bought a holding for \$39,025, which it is said he could dispose of at \$50,000 if so minded. The difficulty attending the opening of a new quarry in St. Louis is responsible for the boom in this class of property. It is necessary to get a petition signed by property-owners, and it is practically impossible to do this.

The Stewart Supply Company, in which James Stewart & Co. and other leading contractors of this city are interested, has been incorporated with a capital of \$60,000. The company owns large deposits of white sand at Grey Summit, along the line of the Missouri Pacific, and a plant to cost upwards of \$100,000 is to be erected at once for mining and marketing the sand.

Draftsmen are hurrying plans for the new St. Louis Postoffice branch at the office of James Knox Taylor, Supervising Architect of the Treasury Department, at Washington. The structure will be of two stories and a basement, the latter to project eight feet above the ground. The basement will be so arranged that mail collection cars can run into it and unload. A subway and tunnels will connect the huge structure with the Union Station terminals. The total appropriation is \$1,525,000. Bids are expected to be called for within two months.

A new factory building for the Ferguson-McKinney Dry Goods Company is to be erected on the block bounded by Thirteenth Street, Lucas Avenue and Linden Street after plans by William Levy. The structure is to be seven stories high, 137x145 feet in area. It will cost with the site about \$400,000. The Arkwright Realty Company was organized to erect the building, which, it is expected, will be completed by next January.

Contracts were recently closed for the erection of fifty modern homes to cost about \$200,000. They will be built in Kenwood Springs by Herman C. G. Luyties, and the contractors are W. A. Watson, who will construct twenty, and C. M. Christine, who has the contract for thirty. The houses will cost from \$3,500 to \$5,000 each. A. A. Heusser has drawn the plans. Five hundred men will be employed on the work during the summer.

James R. Dougan, secretary-treasurer of the Acme Cement Plaster Company, who has just returned from a visit to the company's Texas factory, says that the recent floods are the occasion of serious delay to both passenger and freight trains in that territory. They have just completed arrangements for starting up their Los Angeles factory. Their Palmdale factory has been enlarged by increasing the power plant, and they will install four kettles.

A new concrete block factory, the Modern Cement Products Company, has started in business in Florissant Avenue. They use the Hercules and three other machines and Lehigh Portland cement. For waterproofing they use Medusa brand.

Edward Quebbeman, sales agent for the Universal Portland Cement Company, on being asked about the demand for cement, said the head office had been congratulating him on the good showing made in his territory. Prices, however, are ruling low.

The Union Sand and Material Company are having an excellent demand for their Red Ring brand of Portland cement. Among the large buildings now in process of erection in the city in which their cement is being used are the new St. Louis Cathedral, the Coliseum, the million-dollar Industrial School Building and also the McKinley bridge.

Colonel Cobb states that the many comparatively small structures going up all over the city are making a good demand for Glenco lime. The company is also having a steady trade in Portland cement.

Evens & Howard report the demand for sewer pipe as slow and sales of firebrick running below last season.

### BUFFALO.

**BUFFALO, N. Y.**, June 16.—One of the most important works now in progress in this section involving the use of concrete is the new waterworks plant of Buffalo, for the building of which the Buffalo Dredging Company of this city has the contract. The work includes the construction of a tunnel under Niagara River to the Emerald Channel, a distance of 6,200 feet, and another from the new pumping station at the foot of Porter Avenue to the old one at the foot of Massachusetts Avenue, a distance of 4,600 feet. The long tunnel will have a diameter of 12 feet, while the other tunnel will have a diameter of 9 feet. Both are being cut through the solid rock by the use of compressed air. When cut they will be lined with concrete.

The most interesting part of the work, however, will be the mammoth intake, which will be sunk to a depth of 70 feet at the channel at the head of the river. This intake, which consists of a steel caisson 110 feet wide with an inner shell 90 feet in diameter, has just been finished and will be towed in a short time to its future resting-place at the head of the river. The shells are 35 feet high, and between them concrete will be placed, making a structure which will withstand the ravages of time. In the caisson will be placed twelve portholes, each 6 feet square, with a watertight gate at the rear end of each, these being used as passageways for the water, which will pass through the caisson to the main tunnel 75 feet below the surface of the water. On the top of this caisson a superstructure of concrete blocks will be erected and roofed over with steel. Before the caisson is sunk a bed of about 1,500 yards of concrete will be placed upon which it will rest.

Besides the lining of the tunnel and the filling of the caisson shell with concrete the Buffalo Dredging Company will also build a concrete foundation for the new pumping station at the foot of Porter Avenue, as well as beds for the monster pumps which will be used and which will be set over wells which will also be built of concrete. In the prosecution of this work it is estimated that 40,000 yards of concrete will be used. After the completion of the foundations the contract for the pumping station building will be let. This is to be an ornate structure composed entirely of concrete and steel and will with the foundations cost in the neighborhood of half a million dollars. The contract upon which the dredging company is now working will amount to \$1,500,000. The total cost of the work as planned will be over \$2,000,000.

According to a report from Caledonia, N. Y., the plant of the Iroquois Cement Company of that village has been bought by the Marengo Portland Cement Company of Detroit. Men are at work improving the plant, and it is said that operations will resume shortly. H. J. Davis of Coldwater, Mich., will be superintendent for the new company, it is reported.

Among the appropriations recently approved by Governor Hughes of New York State was an allowance of \$20,325 for repairs at Watkins Glen, N. Y. The repairs will include concrete work, rock excavations and other improvements.

A memorial of concrete, with bronze tablets on which will be inscribed the names of Cornell athletes and their records, will be left by the class of 1908 of Cornell University. An initial sum of \$1,500 has been set aside for the purpose. The arch will be erected at the entrance of the new alumni field.

The Merchants' and Shippers' Warehouse Company on Perry Street, Buffalo, will build two large storage warehouses. Both buildings will be of reinforced concrete construction.

The plan to erect a dam in the Niagara River to maintain the level of Lake Erie has been opposed in an official report presented by the International Waterways Commission to the Canadian Parliament.

Commissioner of Public Works Ward of Buffalo is recommending to Buffalonians that many plank sidewalks in this city be replaced by concrete.

The residents of Wellsville, N. Y., have voted to pave West State Street and South Brooklyn Avenue in that place.

The Board of Contract and Supply of Rochester, N. Y., recently received bids from Ripton & Murphy, McConnell & Bauman and the F. V. Brotzsch Company for building cement walks in that city.

A section of Main Street, Bolivar, N. Y., will be macadamized at a cost of \$5,500.

The contract for resurfacing the West Side Boulevard from the Ridge Road to Beach Avenue, Charlotte, N. Y., has been awarded to the Grand Avenue Horse Company for \$36,769.

Plans for the improvement of the Lockport-Wendell

ville road for 8.17 miles at a cost of \$100,700 has been approved.

It is estimated that Barge Canal contract 66, which extends from Gasport, N. Y., to the foot of the lock at Lockport, N. Y., will cost \$750,000. Contract 60, from South Greece, N. Y., to Brockport, N. Y., will cost, according to an official estimate, about \$1,267,000.

### METAL FORMS IN REINFORCED CONCRETE.

By W. L. CALDWELL.

(Paper read before the National Association of Cement Users.)

Since the building world has practically decided that concrete and steel is the future building material and has determined its feasibility, the next great problem to absorb our attention is the best and cheapest way of erecting buildings of these materials in the shortest time possible, consistent with safety and good workmanship.

To obtain the true value of the concrete as a structural material, it must be put to place in plastic form and be left to set or harden without being disturbed, and as the amount of steel that is necessary to reinforce it is not sufficient or so placed to carry the concrete while going through the hardening process, some independent means must be employed to confine and support the concrete and steel until the former has become hard and taken firm and everlasting grip on the reinforcement.

Up to the present time lumber has been employed for this purpose almost exclusively, but as the price of lumber increases (as it of necessity must do) and the price of steel products become cheaper, the time must come when the former will be abandoned and the latter substituted, even though the latter had no advantages over lumber, wooden forms for centering, for concrete construction is the "bugbear" of all engineers and contractors, not only on account of its first cost, but on account of the great amount of labor and time required to put it to place and remove it after the concrete has hardened. Furthermore, on account of having to re-cut and re-adjust the centering so many times to complete a modern building, it is of little value or use for other similar structures and is a total loss, and in some cases the contractor must pay for having it hauled from the building. The wise and progressive engineers and contractors are endeavoring to find a more suitable and permanent material, less indestructible, to take its place, even though the first cost is not so low—a material which can be used over and over again, thereby producing a great saving. The speaker has had years of experience with wood centering and for the last ten years has had to do principally with sheet steel products for building purposes; therefore, has gained an experience with the manufacture of sheet steel that "stands him well in hand" in an attempt to adapt its use for centering purposes.

It is one thing to design a form for centering, and another to make one that is practical and that can be made on modern machinery at reasonable cost. The thing we must strive for is the minimum amount of steel and labor required to produce a centering that will give maximum results. And this we have attempted to do by forming up sheet steel into certain standard forms so that they may be adjusted to different sized spans or bays without cutting or fitting, while we have to make changes and improvements, yet we believe we are on the right track.

The one great drawback to producing a uniform centering is the disregard of spacing of the columns, girders and beams uniformly for certain types of buildings and of regulating the height of stories. It would appear that the greatest stride that could be made for the success of concrete construction would be to adopt a series of standard sizes and spacings of columns and girders for certain types of buildings. If this can be accomplished it will materially reduce the cost of all such buildings, as certain engineers and contractors will equip themselves with the necessary appliances to erect these buildings at the minimum cost, and again, other contractors will equip for other classes of buildings which seem best suited to their liking. In this way the whole field would be covered and the very best results obtained; at the same time the investor would reap the benefit of the reduction and all would be happy.

Centering can be confined to three types, as follows: For floors where the whole area underlying four columns is flat on underside. Second, where the area is broken up by two cross beams into three panels, and this where the area is divided up by a series of concrete ribs or joists. In all cases the columns may be either round or square, with brackets or plain, and the carrying girders between the columns dropped below the cross beams, ribs or interlying area. The sizes of columns and girders should be restricted to four depths and widths for buildings of ordinary design, and beams of two inches in height for girders and beams, and four inches for diameter of columns, eight inches being the minimum and fourteen the maximum for girder boxes, and four inches the minimum and ten inches the maximum for lateral beam boxes—width of girders and beams in proportion to depth to be determined. Columns may range from twelve inches to twenty-four, with four inches variation, 1c. 12"-16"-20"-24". These sizes could be adapted to almost any type of buildings where light or heavy floor loads are called for.

Again, the variation in height of stories should be restricted, allowing four different heights for first stories, three for second and two for third above, the heights to apply to different classes of buildings. Mercantile buildings can be divided into three classes, i. e., Office, Wholesale and Warehouse.

Manufacturing into two—light and heavy. Miscellaneous, such as Schools, Theaters, Churches and Dwellings, into two. If this could be accomplished you can readily see that it would simplify the whole matter, both for the engineer and contractor, as well as the manufacturing of centering. The engineer would determine the size of columns, girders and beams by the loads to be carried by referring to the table for certain spacings, and the contractor would only need to invest in two or three sizes of forms or centering to construct any one type of building. It would resolve itself into contractors confining their operations to certain types, which would be a good thing, both financially and structurally.

If a committee could be appointed from among the leading engineers, architects and contractors to determine upon the proper heights of stories and size of columns, girders and beams for the different classes of buildings as outlined, even though they may not be able to agree upon all points relating to the different classifications, yet a step in the right direction will have been taken which will lead to ultimate success.

Taking matters as they stand today, sheet steel for

centering purposes will compare favorably with wood in first cost, and the great saving in labor in putting it to place is certainly apparent to everyone who has seen the steel centering. The steel may be shaped for forming columns, either round or square, so that they can be removed without injury, and in one-fourth the time it takes to remove wooden forms. The girder boxes are attached to the column forms and the lateral beam boxes in turn to the girder boxes, for each type of centering; the distance from the center of the column to the first lateral beam is fixed, say five feet, and the distance between the two lateral beams is variable to allow for spacing of columns. The lateral boxes carry the flooring over the whole inter-column area, so that when all are in place the columns form girder boxes, lateral beam boxes and flooring are level and even, allowing for a uniform slab of concrete over the whole area bonding with the columns, girders and beams, making a homogeneous mass. After the concrete has hardened the cross beam boxes are dropped, then the steel floor boards, next girder boxes, after which the column forms are taken off, leaving a clean, even, well formed surface. As soon as the centering is removed it should be examined, and if bent or dented, straighten it at once, and then at the same time brush the surface thoroughly, and give them a coat of oil, so they are ready for use again and not left for the particles of concrete to harden on the surface, after which it will take five times as much trouble and labor to put them into working order. "A stitch in time saves nine."

We do not rely on the girder and cross beam boxes to carry the dead load of the concrete, but rely on adjustable posts to support them in the middle until the concrete is thoroughly hard. The girder box form is so arranged that the post need not be disturbed while the box is being removed, so that there is no danger of accident or failure taking place while papers are down.

### Lower Prices for Structural Steel.

Announcement is made by Judge Elbert H. Gary, chairman of the United States Steel Corporation, that a general reduction in the prices of finished steel products has been agreed upon by representatives of the large steel interests after a long conference. The reduction affects billets, steel bars, plates, structural iron, merchant pipe and wire nails. Judge Gary, who acted as chairman of the conference, made the announcement of the reduction at the conclusion of the meeting of the steel manufacturers, which was held at the Railroad Club in the Hudson Terminal Building. The statement was as follows:

"The representatives of the leading steel manufacturing companies have been in session during the day. It is understood the price of iron ore has been or will be soon reduced 50 cents per ton base.

"Each one of the steel manufacturers expressed the opinion that there should be a readjustment in the prices of their respective commodities, as follows:

"Billets, from \$28 per ton to \$25, Pittsburg.

"Sheet bars, from \$29 per ton to \$27 per ton, Pittsburg.

"Plates, from \$1.70 per 100 pounds to \$1.60 per 100 pounds, Pittsburg.

"Structural iron, \$1.70 per 100 pounds to \$1.60 per 100 pounds, Pittsburg.

"Merchant pipe, a reduction of two points, or \$4 per ton, Pittsburg.

"Wire nails, from \$2.05 per 100 pounds to \$1.95 per 100 pounds.

"Sheet and tin plates were reduced early in the year; therefore no changes were considered in the prices of these products."

### Arthur Koppel Dead.

Too late for publication in the last issue of ROCK PRODUCTS, news was received from Berlin of the death of Arthur Koppel, who thirty years ago established the Arthur Koppel Company, and two years ago founded the township of Koppel, now a thriving little village near Pittsburg, Pa., in which is located the new American plant of the company.

Mr. Koppel's demise occurred on May 13 in the city of Berlin, heart failure putting a sudden end to his honorable and successful career as a captain of industry. At this time he was in his fifty-seventh year, having been born in Dresden, Germany, in 1851.

His business career began at the early age of seventeen years, when he was interested in a concern which dealt in structural iron. In 1876, or in his twenty-fifth year, Mr. Koppel established his own firm, taking up the problem of transporting all kinds of material for narrow-gauge railroads. The wide and general use of portable industrial track has been accomplished through his earnest and tireless efforts to reach the highest degree of perfection in his chosen line. His popularity increased with that of his product, which is today known all over the world in quarrying, mining, agricultural and other industrial centers, where portable industrial track and equipment is used.

There will be no change in the organization of the Arthur Koppel Company, which is governed by a board of directors. Mr. Kurt Koppel, a son of the deceased and one of the managers of the New York office, is at present in Germany.

To the family of Arthur Koppel, which consists of his wife, three sons and one daughter, ROCK PRODUCTS add its condolence to that of the 7,500 employees who are mourning the loss of a good friend.

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First-  
Class  
Mill  
with an  
Unex-  
celled  
Product



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## The Bonner Portland Cement Co.



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THE HIGHEST GRADE OF  
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CEMENT BLOCK FACING  
STUCCO  
WHITE PLASTER

## Washed White Flint Sand

Prices, Samples and Freight Rates furnished on  
application. Write us.

United States Silica Co.

1044 AMERICAN TRUST BLDG.

Works: Ottawa, Ill.

CHICAGO, ILLS.

## Water Proofing Cement Work

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is an established fact. (Licensed, U. S. Patent  
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The Maumee Chemical Company

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This trade mark stands for the highest standard of excellence attainable in the manufacture of Portland cement. Continual tests, both in the laboratory and in practical construction work, extending over a period of eight years, emphasize the utmost perfection of Universal Portland Cement.

## UNIVERSAL PORTLAND CEMENT COMPANY

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## The BATES VALVE BAG

The strongest and most perfect  
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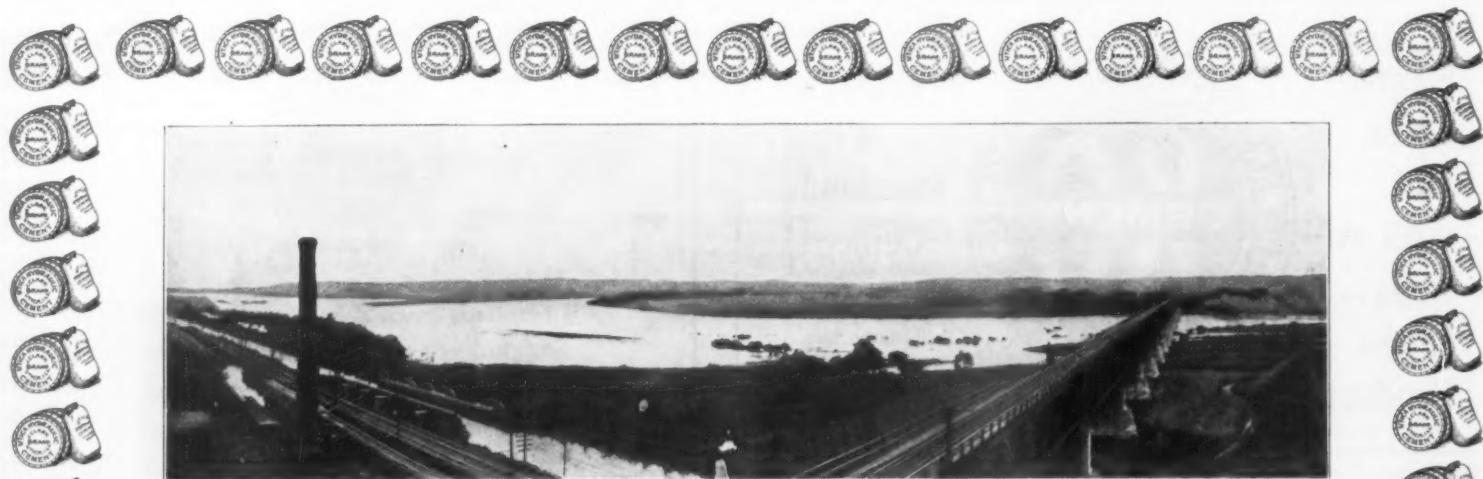


Economical packing and smallest  
percentage of breakage  
IT IS WATER PROOF!

The West Jersey Bag Co.

Front and Elm Streets

CAMDEN, N. J.



The Illinois Central Bridge at LaSalle, Ill. Built Fifty Years Ago.

**THERE IS NO GUESSWORK ABOUT  
UTICA CEMENT  
TIME HAS PROVEN ITS PERFECTION**

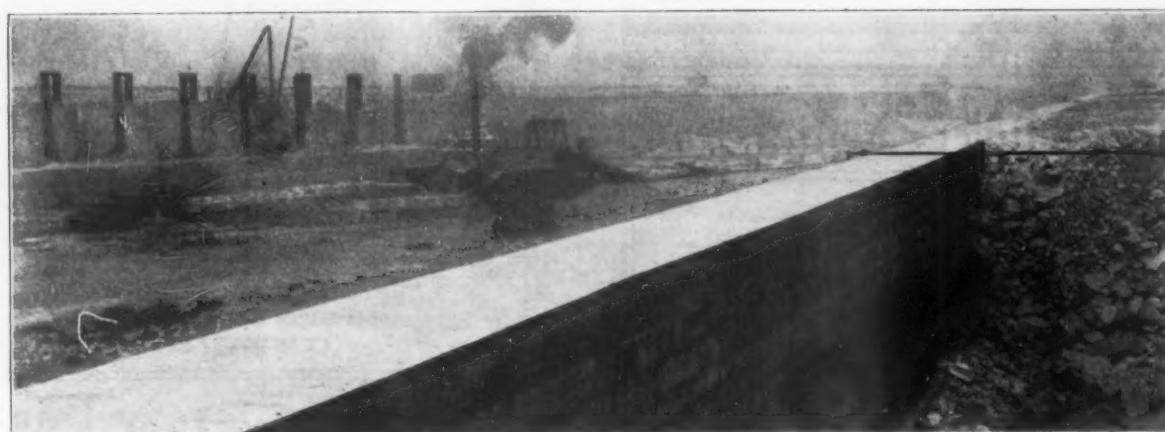
**For Heavy Construction Work It is Unsurpassed, and This Fact is Universally  
Recognized by Famous Engineers**

The top picture is especially interesting inasmuch as it shows the Illinois Central Bridge, over the Illinois River, at LaSalle, Ill., **built in 1856**, and famous for many years thereafter as the largest railroad bridge in the Middle West, being three-fourths of a mile in length and more than 90 feet high; also the aqueduct of the Illinois-Michigan canal shown at the left of the bridge, which was **built in 1838**. Utica Cement was used exclusively in the construction of this great bridge and aqueduct, and both are as good now as when built. In fact, better, as Utica Cement improves with age.

Over half a million barrels of Utica Cement was used in the great Chicago Drainage Canal. It was used also in the Hennepin Canal and the breakwater and retaining walls of the Rock Island Arsenal. Utica Cement is now being used in track elevation work by the C. R. I. & P., C. B. & Q., C. & N. W. and B. & O. Railroads.

**USERS OF UTICA TAKE NO CHANCES  
Our Guaranty Goes with Every Bag and Barrel**

**Utica Hydraulic Cement Company** **UTICA,  
ILLINOIS**



Retaining Walls of the Chicago Drainage Canal. Notable Recent Engineering Triumph.



# LUMP vs HYDRATED LIME

An interesting and instructive story worthy of serious consideration

## Lump Lime

1. Will air-slake.
2. Generates heat on slaking and with High Calcium Limes **Burning** frequently occurs.
3. Contains considerable **Grit** and **Core**.
4. Is difficult to mix in exact proportions.
5. Requires time for complete slaking.
6. Is inclined to pit and crack on the wall, unless extreme care is exercised.
7. Cannot be slaked and then mixed with cement in cement mortars with uniform results.
8. Causes considerable loss.
9. Is dirty to handle.
10. Works uneven.
11. Is a constant source of trouble.

## Hydrated Lime

1. Will not air-slake.
2. Requires no slaking; consequently a cool, plastic putty is assured, with no heat.
3. Contains no **Grit** or **Core**.
4. Is a dry powder and can be as accurately proportioned as cement.
5. **No Time** required for slaking; simply mix to a putty.
6. Will not pit or crack on the wall.
7. Can be mixed dry with cement, assuring absolutely uniform results.
8. Causes **absolutely no Loss**.
9. Is neatly sacked, consequently clean to handle.
10. Works perfectly **even**.
11. Is a labor saver and source of economy in every respect.

We are installing commercially successful hydrating plants.

**THE KRITZER CO.**  
17th and Western Ave.  
CHICAGO



## Our Declaration to our Customers and their Customers

The same feeling of safety may be attached to the use of Whitehall during these low-priced times that has been your pleasure to enjoy in the prosperous times of the past.

### WE DECLARE

That WHITEHALL is not adulterated in any manner.  
That it contains no raw rock, cinders or ashes.  
That it is the same high quality that it has been in the past.

That if it were possible to improve the quality we would do so.  
That it meets, in every respect, the Standard Specifications as adopted by the American Society of Civil Engineers, and that it does so with a good, substantial margin in our favor.

We want the trade of responsible and self-respecting dealers who know they are justified in their personal guaranty that WHITEHALL is right all the time, and is an especially high-grade Portland Cement.

**THE WHITEHALL PORTLAND CEMENT CO.**  
1722 Land Title Bldg. - - - - - **PHILADELPHIA, PA.**



We've a product worth boosting, and we believe that we Have a right to "shout" its praise. We know that it will Ever back us up in the claims we make for it, and by its Excellence and worth justify our boosting it as we do. Light, elastic, porous, smooth and uniform, our plaster Is made in neat, sanded or wood-fibre form, as wanted, No architect, contractor or dealer need hesitate to Guarantee satisfactory results where our plaster is used.

## WALL PLASTER

For the past fourteen years WHEELING WALL PLASTER has been meeting with remarkable success, and has come to be known everywhere as the "standard" of wall plasters. It is guaranteed unsurpassed for strength, durability and easy spreading qualities. Ask for our illustrated booklet, "Better Walls."

**WHEELING WALL PLASTER CO.**  
**WHEELING, WEST VIRGINIA**



## CONCRETE IN ALABAMA.

## Good Work Being Done at Birmingham and Elsewhere in the State. Cement Tile at Mobile.

BIRMINGHAM, ALA., June 12.—In the great iron center of the South concrete work is playing an important part in building construction. Other cities than Birmingham in this State show good examples of concrete block residences, churches and business houses, but perhaps a greater volume of work has been done in Birmingham than any other place in Alabama. Herewith are views of some residences and flat jobs made by the Cement Block Manufacturing Company of 2023 Third Avenue. A cut of their plant is also presented. The Fulenwider Concrete Company, on Railroad Avenue and Bibb Street, is another concern here that does a large amount of creditable work within and without the city.

Recently Chief Bennett of the Fire Department here made a practical test of some of the concrete blocks manufactured by the Fulenwider Concrete Company. A building was constructed, oiled and fired. A hotter fire was never seen in Birmingham, but the walls remained absolutely intact and unharmed. The company in question is one of the pioneer building supply firms of Birmingham and handles a wide range of material in connection with its block-manufacturing business.

The Cement Block Manufacturing Company are makers here of what is known as the Slagcom building blocks. They also make concrete steps, cornices, pilasters, columns, caps, balustrades and special designs in concrete. Their factory is located on Tenth Avenue at Nos. 1700 to 1722. They make blocks of varying angles, octagon blocks, circular blocks, keystone and lintel blocks. Then for ornamental pieces there are friezes, corner pieces, capitals and bases of chaste design. The Elms, a residence of Col. L. W. Johns, is a pretty example of their work; also the Halls apartment-house at the corner of Georgia and Montgomery Avenues. The Fayette stores at Ensley, Ala., a large number of tenement houses over the city and the Norwood fire station, built by the city of Birmingham, are all examples of their stone work. The Coltrin machine is used. W. G. Oliver is president of this company and W. A. Watts is secretary and treasurer. They use large quantities of Portland cement and have sand pits of their own.

At Montgomery, the ancient capital of the Confederacy, concrete block work is in its initial stages, but some creditable residences have been erected in the city and vicinity.

C. A. Clapp, of J. S. Conniff & Co., pays a great deal of attention to the manufacture of cement stone. The plant is at McDonough and Pollard Streets. Mr. Clapp's first notable job was a residence for himself, and since then he has built several structures. In the cement department of his business he has done a good deal of paving and special work for the Western Railway.

The Montgomery Molded Stone Company, located in Montgomery, at the corner of North Lawrence and Monroe Streets, devotes its attention exclusively to cement block work. Both of these concerns use pit sand from the Alabama River and utilize considerable quantities of White Hall, Red Diamond and Dexter Portland cements.

Schafer & Chapman of Montgomery manufacture paving blocks and do paving work that calls for the use of much cement. They get out hexagon tiling, and do a great deal of curb and gutter work.

At Mobile, Ala., the National Mosaic Flooring Company has one of the few plants of the kind in the United States. It came into operation this year. It is located along the Louisville and Nashville Railroad at Hurler Street. The company owns ten acres of land for its plant and has buildings that comprise 55,000 square feet of floor space. The owners are Planiol & Cagiga and Diaz & Bros. of Havana, Cuba, and F. Benemelis of Mobile. The Cubans named are wealthy merchants of Havana and are also the owners of the largest tiling plant in Cuba. Mr. Benemelis is president of the Benemelis Steamship Company and manager of the Mosaic Company at Mobile. Its capital stock is \$250,000 and the capacity of the plant is 6,000,000 tiles a year. The Spanish, sometimes called the Cuban tile, is a compressed,



ROW OF CONCRETE FLAT BUILDINGS, BIRMINGHAM.  
(Erected by the Cement Block Manufacturing Company, Birmingham, Ala.)

rectangular plaque of cement, seven inches square and about three-quarters of an inch thick. The presses are run by hydraulic machinery. The labor is mostly imported from Cuba. There are two grades of cement used—the celebrated Lafarge French cement for the wearing surface and the cheaper or darker grades for the backing or body.

built in this city; the New York State Fair Building, upon which about one-quarter of a million is being expended; the eight-story Cadby Building in Auburn, and several smaller jobs. They also have large contracts on hand for sidewalks and concrete work. This unusual amount of business causes them to employ more men at present than at the corresponding time



CONCRETE RESIDENCE AT BIRMINGHAM, ALA.  
(Erected by the Cement Block Manufacturing Company.)

## Report Increased Business.

SYRACUSE, N. Y., June 3.—In sharp contrast to the majority of stone and monument dealers the Onondaga Litholite Company are thoroughly optimistic and report a good business all through the spring, with excellent prospects for the summer and fall. They manufacture plain and ornamental stone, litholite stone, hollow building blocks, litholite sidewalks and curbing, at 105 North West Street. Their goods are somewhat cheaper than the natural stone product, and on this account hard times bring them additional customers. Their litholite stone is made from crushed marble and granite and is molded and tooled afterward. They recently secured contracts for supplying material for the new Elks' Temple which is being

## Get Big Piling Contract.

MONTREAL, CAN., June 10.—The Raymond Concrete Piling Company of Canada, whose head office is in this city, have been awarded the contract for all the piling preparatory to laying the foundation for the new Union Station in the city of Winnipeg. There will be about 1,800 piles put down, and the job, which is a hurry-up one, will probably be accomplished in six weeks. The same company has just completed the piling, a mile in extent, of the Canadian Pacific Railroad bridge at Lethbridge. Of the company's four outfits two at least will be used on the Winnipeg work.

## Northwestern Cement Products Association.

MINNEAPOLIS, MINN., June 1.—At a recent meeting of officers and members of the executive committee of the Northwestern Cement Products Association held in this city the subject of the convention to be held in 1909 was thoroughly discussed. The sentiment was unanimous that the next convention should be held in one of the Twin Cities. The report of the treasurer showed the association to be in excellent condition financially, all bills having been paid, including the cost of printing the proceedings of the last two conventions. This publication is now being mailed to all the members and will prove not only interesting reading, but extremely valuable for reference. Much enthusiasm was manifested as to the prospects of the next convention, which promises to be the most successful in the history of the association. At the conclusion of the session J. C. Van Doorn, who was elected secretary of the association at the last meeting, showed his appreciation of the honor by entertaining the officers and committee men at a dinner in the banquet room of the Commercial Club.

The Concrete Building Company has been incorporated at Cleveland, O. Capital, \$20,000. Incorporators: A. L. Barnard and others.



PLANT OF THE CEMENT BLOCK MANUFACTURING COMPANY, BIRMINGHAM, ALA.

## AMONG THE CONCRETE WORKERS.

P. P. Comoli, Sioux City, Ia., is making a specialty of cement enclosures around cemetery lots and is doing a big business in that line.

The Artificial Stone Company has been incorporated at Waterbury, Conn. Capital, \$1,525. Incorporators: A. E. Green, M. J. Bryne and Margaret M. Butler.

The Cement and Concrete Construction Company has been incorporated at Denver, Col. Capital, \$100,000. Incorporators: Alexander J. Graham, Warren D. Simons, George W. Polk.

The Clinton Concrete Company has been incorporated at Clinton, N. Y. Capital, \$50,000. President, Nathaniel L. Howe; treasurer, Alfred O. Perham; clerk, Lewis S. Gordon, all of Clinton.

The Atlas Artificial Stone Company, Evansville, Ind., was dissolved last month by the Superior Court on petition filed by Louis Petsch against Henry F. Schrader and Henry Kammen, copartners in that company.

Contractors Fehr & O'Rourke of Reading, Pa., with a force of twenty men, last month completed the concreting of Greenwich Street between Eighth and Ninth Streets, in that city, in the record time of thirty hours.

At a meeting of the creditors of the Narragansett Cement Stone Manufacturing Association, Providence, R. I., recently Edward G. C. Dubois was appointed trustee, and his petition to sell the assets of the concern was granted.

The Cedarville Stone Company are supplying the blocks for a large storage building now being erected on East Main Street, Ft. Wayne, Ind. The building is being constructed entirely of artificial stone and is 70x100 feet.

At a meeting of the stockholders of the Artificial Stone Company, Ft. Wayne, Ind., May 21, H. J. Keiser was elected president, H. Felger vice-president, E. L. Pfeiffer treasurer, Michael Kinder manager and J. E. Houk secretary.

Anderson & Veatch, house builders and material dealers at Evansville, Ind., have added to their establishment a plant for the manufacture of concrete roof tile, having secured machines for the purpose from the Brock Brothers Manufacturing Company of St. Louis.

The Wilson Reinforced Concrete Company of Omaha have been awarded the building of the large bridge across South Table Creek at Nebraska City, to take the place of the large combination bridge washed away by the storm two years ago. This is the first concrete bridge in that county.

Ralph Hayden, formerly connected with the conduit construction department of the Telephone Company at Lowell, Mass., has just started a plant for the manufacture of concrete blocks at that place and has established offices in Boston. He expects to do considerable business in the rebuilding of Chelsea.

Shaffer, Hawk & Cook, in connection with T. Van Hook, an expert on concrete who recently came to Boise, Ida., from the East, have started a concrete block plant at the corner of Eighteenth and Eastman Streets in that city. The company expect to make blocks at the rate of 500 per day and have opened offices in the Overland Building.

The Hoffmannstone Impervious Cement and Brick Tile Company are erecting at Rhinelander, Wis., a large plant on the shore of Wind Pudding Lake. The plant will comprise 120 acres 50 feet above the lake level, containing a fifty-foot layer of mica sand. The mill, when completed, will have a capacity of 50,000 bricks a day. G. Hoffman, president of the company, writes ROCK PRODUCTS that communications for the present should be addressed to their office, 598 Jackson Street, St. Paul, Minn. He expects that the plant will be in running order in the fall.

## STRUCTURAL TILE.

## A Tremendous Demand Developed in the Home Town of the Invention. Foundry Capacity Increased with Call for Machines.

In a recent interview with A. A. Pauly, the inventor of the concrete tile and pipe system which bears his name, at his Youngstown plant, he said: "We are developing a tremendous demand for our fireproof structural tile, so much so that we cannot begin to take care of the business that is constantly being offered. All the tile that we can make during the present season with the equipment now in our plant has been sold, and it is really hard to prevent deliveries from being made before the tile are properly cured and aged, as they must be in every instance before they are put into construction. There are a great number of big buildings going up in Youngstown this season, probably more than in any other city of its size in the country, and nearly all of them are of reinforced concrete construction. All that we can furnish will be supplied with Pauly's structural tile as well as partition tile."

This is probably largely due to the progressive and intelligent building authorities of the city and county, who make a practice of adopting the best and most up-to-date materials and systems as fast as they are developed and carefully demonstrated to be a sound improvement.

Walking over to the tile plant, where no less than seven machines were found to be in constant operation, as shown by the accompanying illustrations, Mr. Pauly explained that cinder concrete tile for partition purposes had become very popular with the specifying architects, because they make a very rigid and at the same time light-weight partition for office buildings and hotels, where the dead load of the large number of partitions makes in the aggregate a very great item of the total dead load of the building. The studding and lath partition can no longer be countenanced in modern construction, for they amount to no more than so much tinder placed inside of the building, thereby greatly endangering both life and property. The cinder concrete tile is probably the best fire-resister that has yet been produced as a building material, and superior to every kind of tile for the reason that the exterior surfaces are all perfectly true, so that a very thin coating of plaster is all that is necessary; and in fact, without any plaster at all, the skim or finished coat can be spread upon



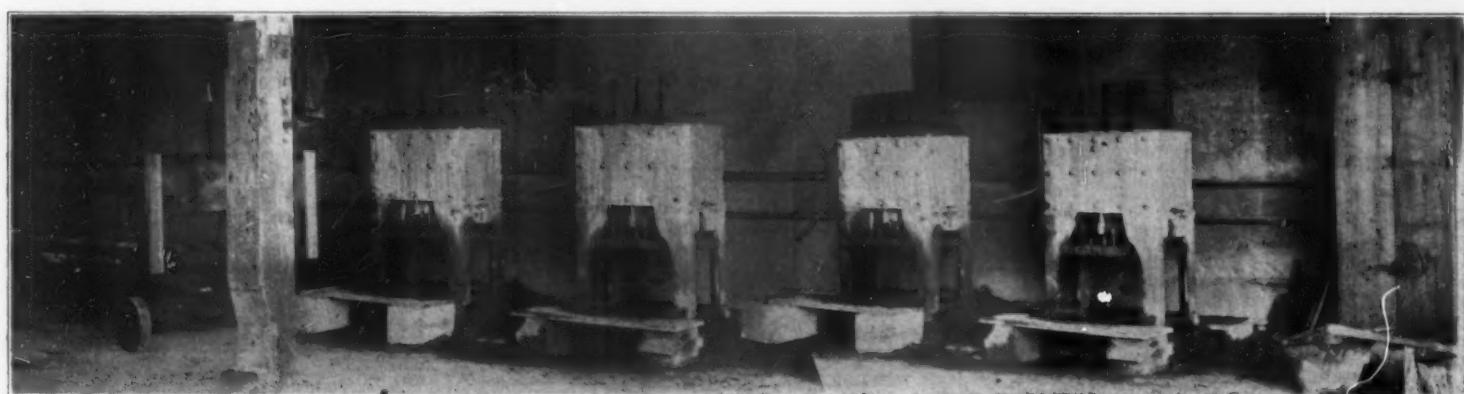
INTERIOR VIEW OF THE PLANT OF THE CONCRETE STONE AND SAND COMPANY SHOWING LARGE SIZED STRUCTURAL TILE.

First in importance is the million-dollar Courthouse job, which was started about the first of May. The Dollar Bank has just begun an eight-story addition to its building, and the Masonic fraternity will break ground within a few weeks for another big office building with assembly halls for the various branches of that order represented in Youngstown, which will be known as the Masonic Temple Building. Charles Cornell, a concrete contractor, has just completed the Century Building of reinforced concrete, using 45,000 of the Pauly structural tile in the interior for partitions and in the floor spans. The same contractor has just begun the erection of another similar commercial building, and the Kahn people have just completed the eight-story Stambaugh Building in the center of the city. These are the notable concrete structures now under way at Youngstown, where the fireproof construction idea prevails to the exclusion of everything else when it comes to important building.

the cinder tile wall direct, as Mr. Pauly has demonstrated recently in the construction of his own suite of offices at the plant.

Another recent development in the Pauly system of concrete materials is the completion of the sewer-pipe machine. This machine is practically the same in design as the tile machine, except that the material is finished in cylindrical form with a bell at one end, so that the pipe may be fitted or joined to the next one in the line. The material is the same as structural tile, namely: poured concrete, using fine ground limestone trap rock or fine-grained screenings properly proportioned for a concrete aggregate with cement. This material is cast in steam-jacketed molds in gangs of four or eight, according to the size, and cured with steam and air the same as the structural tile.

In the system of sewer-pipe manufacture the various fittings and shapes are made by the same method



PARTITION TILE DIVISION IN THE PLANT OF THE CONCRETE STONE AND SAND COMPANY, YOUNGSTOWN, O.



MACHINE SHOP IN WHICH THE PAULY TILE MACHINES ARE BEING BUILT.

that cast-iron pipe fittings are produced, viz.: a false piece is cast into the original pipe, and afterward the branch or leading-out part is grafted into the opening by the removal of the false block before curing. Such fittings can be made quite as sound and much cheaper than those made by the clayworkers.

By Mr. Pauly's invitation the ROCK PRODUCTS man visited the plant of the Youngstown Engineering Company, where the Pauly tile and pipe machinery is manufactured. H. A. Boyd and L. A. Treat of this concern are machinery designers and engineers of recognized standing and are giving their best efforts in producing the Pauly line of tile and pipe machinery. R. C. Barr, the superintendent of this extensive plant, is a man of long experience both in the foundry and machine shop, and he says that every part of these machines is molded, forged, finished and tested with every known precaution to build the best machines for the purpose that first-class equipment, close attention and experience with the use of the best materials can produce. The tile machines are put through the factory in gangs of four, and it has become necessary to increase the foundry accommodations to take care of the casting branch of the work, which increased rapidly as the number of machines in operation multiplied.

About this time Richard Garlack, the president of the Concrete Stone and Sand Company, drew up in his automobile. He is a local steel magnate and is also president of the Youngstown Sheet and Tube Company, which extensive institution is under his personal guidance. He is a young man of energy and great capacity who has already made his mark in the industrial world and numbers Mr. Pauly's line of concrete tile and pipe machinery as among those things to which he has applied his magic touch. Mr. Garlack, like Mr. Pauly, is accustomed to success in all his undertakings and looks upon the wonderful developments and steadily growing popularity of the fireproof tile factory and the machinery division, which is supplying the machines to others to manufacture the same line of goods, as a matter of course.

Speaking of the machinery branch of the business, he said: "We have taken measures to provide exclusive territory for all who are now investing in the establishment of plants for the manufacture of fireproof structural tile and sewer pipe by the Pauly system by leasing the machines to manufacturers upon a very attractive basis to them, because it is the best route to insure them against destructive competition. We have been very careful in selecting the licensees of our line of machinery, because we do not propose to let it get into the hands of parties unable to make a success of the business in the market where they operate. We consider the manufacture of this line of materials as a strictly local proposition, for some good aggregate for making the tile and pipe can be found convenient to almost every market and the expense of freight and delivery on this line of goods makes long shipments practically prohibitive where it is so easy to establish a local factory. For this reason it is realized that a very large number of licensees will have to be supplied with machinery before the markets of the country can be adequately supplied with concrete tile and sewer pipe."

Mr. Pauly laughingly remarked in this connection that if there had been no business depression in the country he would certainly have had a little panic all to himself with the avalanche that would have come upon them in comparison with the present remarkable progress in a very dull season in the structural line.

#### Popular Type of Concrete Dwelling.

We present in this issue a type of construction which ought to prove very popular for small homes. Concrete blocks are employed in the walls and concrete stucco is used under the eaves of the roof. The porch, columns and steps are all of concrete molded in special forms. This residence is a very pretty example of what can be accomplished in concrete construction for small homes. Being practically fireproof, the cost of insurance is thus reduced. The Lincoln Stone and Supply Company of Lincoln, Neb., have built quite a number of these houses in Lincoln, and they have all given general satisfaction.

#### Concrete Livery Barn.

W. A. Wheeler of Atkinson, Neb., has built many concrete stores, residences and other buildings at Atkinson and other cities in Nebraska. In the accompanying photo ROCK PRODUCTS presents a stable built of concrete blocks in Atkinson, which was also erected by him. Universal Portland cement was used in the construction. Stables are usually filled with inflammable material, such as hay and grain, and for that reason every precaution is necessary to make the building as near fireproof as possible. Concrete blocks serve admirably for this class of construction. The cost is very little more than that of other materials and the danger is reduced to a minimum.

#### New Incorporations.

The American Cement Engineering Company has been incorporated at New York City. General contractors and to manufacture cement tile, brick, etc. Capital, \$400,000. Incorporators: Edward E. Brown, 200 Fordham Road; Charles H. Reedt, 52 Prince Street, both of New York; Alfred M. Gildersleeve, 313 State Street, Brooklyn.

The Harrisburg Concrete Tile and Construction Company has been incorporated at Harrisburg, Pa. Capital, \$15,000. Incorporators: John Malone, David C. Malone and John T. Irwin.

Frank J. Sullivan Granitoid Company has been incorporated at St. Louis, Mo., to do granitoid, concrete and cement work of all kinds. Capital, \$2,000. Incorporators: Mary T. Davis, John J. L'Neill and William H. Corcoran.

The Maine Concrete Products Company has been incorporated at Bangor, Me., to manufacture and deal in concrete blocks, concrete tile, etc. Capital, \$10,000. President, Victor Brett; treasurer, A. L. Bickford.



CONCRETE LIVERY BARN AT ATKINSON, NEB.

#### FALSE REPORTS.

##### A Fair Sample of the Way Concrete is Criticised by Its Enemies.

In a recent issue of the Philadelphia *Item* there appeared an editorial decanting against the concrete industry and citing the recent collapse of the Pickford Building at Washington, D. C., as a sample of a modern concrete structural development which failed. The article closes with a review particularizing all the difficulties and accidents that have occurred in the use of concrete throughout the country in the last two or three years, or since concrete has been widely accepted as the leading building material. In comparison with the many thousands of shining examples of complete success the brief list of failures in concrete becomes insignificant, and in each and every case competent and well-advised juries have decided that the cause of disaster lay in the lack of the ordinary precautions that should surround every building operation. Indeed, in nearly every case where there has been a so-called failure of concrete the same or even a worse catastrophe would have occurred had any other material or system of construction been used with the same carelessness and lack of attention to fundamental details.

With regard to the collapse of the Pickford Building, which occurred on June 9, the apparent falseness of the statement that it was a failure of concrete construction is a fair sample of the methods which interested parties are resorting to in order to build up a prejudice in the public mind.

The following report comes from a correspondent of ROCK PRODUCTS who was on the ground and who personally inspected the Pickford Building after the



CONCRETE RESIDENCE ERECTED BY THE LINCOLN STONE AND SUPPLY COMPANY.

accident and looked at the blueprints: "The Pickford Building was in all respects a brick building. That is to say, the walls were of brick, and these carried the floor loads. The floors were constructed of reinforced concrete. The portion that fell and caused the collapse of the floors was entirely of brick construction, being a corner bay about 14 feet square, designed with large window openings on either side of the corner pier, which was practically detached without ties or anchors of any kind extending to the main brick wall. This corner brick pier was designed to carry the reinforced concrete floors, four in all. The upper floor had just been completed. In the finding of the coroner's jury, which investigated the accident and its cause, it will be noticed that no fault was found with the concrete part of the specifications or with any of those in charge of this branch of the work. A poorly constructed brick pier gave way and precipitated the corners of the supported floors, killing two men and injuring six others, and the full truth of this statement is shown in the verdict."

The report of the jury is here given in full:

We find that the said Richard West came to his death from crushed wounds of the chest and asphyxiation. Said injuries were caused by being caught in a falling building being constructed at Twentieth and P Street, N. W., and owned by one Thomas H. Pickford, the cause of the fall of which we determine to have been the faulty construction of the corner pier, which was not of sufficient strength as computed and passed by the Building Inspector's office.

Therefore we hold the following persons criminally responsible and for the further action of the grand jury: The district Inspector of buildings, Snowden Ashford, for the approval of plans of the said building.

The foreman of iron construction, Harry Blake, employed by Barber & Ross, for improper construction of the iron work.

John Frank Byrne, the brick contractor, for the hasty construction and use of poor material.

Thomas H. Pickford, for negligence in not having a practical and competent man in charge of the general construction and supervision of the different work of the several contractors.

## In Re the Drain-Tile Controversy.

(Contributed.)

Two recent occurrences have precipitated a controversy respecting the relative merits of cement drain-tile and clay drain-tile, with which many ROCK PRODUCTS readers are familiar more or less. The first was a letter by Prof. Edward Orton of Ohio State University, deplored the use of cement in tile-drains; the second an address by G. G. Wheat of Emmetsburg, Iowa, before the Iowa Brick and Tile Association, on January 23, 1908. Both letter and address have been reprinted and widely distributed by the clay-tile manufacturers. The durability of cement is challenged, and an attempt made to destroy confidence in this material. That this attack will prove a boomerang there can be no doubt, since the positive evidence in favor of cement is overwhelming. It will prove of interest to every user of cement to have the points brought out by this controversy reviewed and analyzed.

Mr. Wheat's argument is entirely destructive. While citing several examples to support his theory regarding cement, he offers nothing in contrast to show the superiority of clay-tile. Evidently assuming that all cement concrete is of one grade, he proceeds to take for his illustrations examples of poor workmanship, drawing the broad conclusion that all concrete will fail under similar conditions.

The anti-cement tile argument, as presented by Mr. Wheat, may be reduced to three propositions, as follows: 1. Cement is soluble. 2. Cement meets harder conditions of service when used in drain-tile than anywhere else. 3. Where cement tile factories have been established clay tile has been practically driven out of the field. Incidentally, it may be noted that Mr. Wheat is manager of a clay tile factory in Northern Iowa, where the use of cement tile is increasing rapidly. As corollary to the first proposition, he states that complete solution of the cement matrix may take place in from six to ten years, and that perfectly set cement will undergo transformation and loss in solution. From the second proposition it follows that the matrix will wash away and leave only a shell of sand (although not a shred of evidence is given to bolster up this contention), and that the use of cement tile so extensively threatens great harm eventually to drainage works. As to the third proposition, no corollary is stated, but this one is obvious: there must be a reason for the preference for cement tile.

Mr. Wheat endeavors to support his argument by numerous illustrations which will not stand analysis, but the mere statement is harmful, because many people believe what they see in print. An instance of the wrong inference was drawn by Mr. Wheat in the following: Thirty years ago a man living in Illinois built an ornamental fence of Portland cement concrete. Fifteen years ago the fence was still standing and the pride of its owner. Last year the fence was not to be found; therefore, it had rotted away. Therefore, cement is not a lasting material. No inquiry into the true cause for removing the fence appears to have been made.

Another peculiar illustration is this: A house in Des Moines is built of concrete blocks. The sidewalk in front of the house is dirty. Therefore, cement is unsuited for building blocks! However, the picture shown of this wall would indicate that it will be serviceable for several generations, assuming that the blocks were made with reasonable skill.

Singularly enough, Mr. Wheat offers no evidence of a single failure of cement drainage tile, although many miles of such tile have been laid in his neighborhood. Instead, he bases his conclusions on observations of concrete curbs, fence posts and cisterns. Against one piece of curb in which the aggregate is exposed, because the workmanship was poor, may be cited innumerable cases, in all parts of the country, where the curb, being properly made, has stood for years and is today as good as ever. An Iowa druggist built a fence with cement posts, but it lasted only five years, says Mr. Wheat. It is assumed that this druggist knew how to make cement posts as they should be made, used proper materials in correct proportions, and put in good workmanship. The feebleness of this illustration must have been felt by Mr. Wheat, for perhaps inadvertently he defends cement posts in these words: "Concrete fence posts have been used in many places, and to draw illustrations from them must not be construed as any argument against fence posts." Thus does he knock out the prop from under part of his argument.

Attention is drawn to the alleged failure of the concrete water table in the Palo Alto County Courthouse at Emmetsburg. The claim is made that the projecting corners have disintegrated because subjected to an excessive flow of water. A photograph was shown with this comment: "The material was imperfectly mixed and the poorer part dissolved first." There is the answer—imperfect mixing. An investigation of this water table discloses some facts which Mr. Wheat failed to mention or to observe and are of interest. The building was erected in 1880.

The cornerstone, which is of limestone, is badly weathered, but the cement water table above it is in excellent condition. It is also noticeable that the limestone window caps are going to pieces, while the cement water table over them is absolutely sound. Unfortunately among the blocks in the water table are a few pieces showing poor workmanship, and so obviously is this the case that even Mr. Wheat admitted the concrete was imperfectly mixed. Across the street from the courthouse is a hotel, built the following year, and which has concrete trimmings in perfect condition. These trimmings are remarkable as early examples of molding ornaments in concrete.

A cement cistern was found to contain hard water, and the wall was found to be somewhat porous. A coating of cement made the wall impervious to ground water, and "the hardness of the water ceased." No suspicion was raised as to the stability of the cistern. Mr. Wheat attributes the hardness to infiltration of ground water, and in this he is undoubtedly correct. It is difficult to see what bearing this illustration has toward confirming Mr. Wheat's theories. There is no evidence that the cistern referred to ever had been tight, and without such evidence no fair conclusion can be drawn. Furthermore, it is five years now since this cistern was repaired and, according to the rate at which cement goes into solution, as stated by Mr. Wheat, this cistern should be little more than a shell of sand. He would not have failed to make capital of it if the cistern had shown any sign of weakness at this time.

Again we learn that "There is and can be no such thing as a good cement drain. Even if it were all cement it would dissolve and carry away in one generation." We are expected to take this statement seriously. The claim that in six to ten years the cement bond is destroyed in such construction as cisterns and tile drains is based on a laboratory test of a fragment of concrete weighing 73 grams, which lost .0325 grams after soaking 72 hours in distilled water, and .0039 grams after soaking 74 hours in city water. As the concrete was a 1.3 mixture, Mr. Wheat argues that it would lose all its cement in about six years. This deduction is not warranted by any means. The test should have been repeated several times on the same sample for check results. It must be granted that a portion of the cement is soluble, but not all of it. The amount of the sample dissolved was decreasing rapidly with each trial, yet Mr. Wheat assumed that it would continue uniformly. The amount stated to have been successively dissolved per hour was .000452, .000335, .000411 and .000053 grams. The first and third tests were made with distilled water and show a falling off of 10 per cent, the second and fourth made with city water show a decrease of 84 per cent. The distilled water tests are not comparable with practical conditions, since ground waters always carry impurities in solution. The durability of cement is established by years of use on the spillways of dams and ancient aqueducts. When perfectly set it is as lasting as stone.

Thus we come to Mr. Wheat's third proposition, which appears to be the nub of the whole matter, namely, that cement tile is killing the clay tile business. We have no reason to doubt this conclusion, and Mr. Wheat is certainly in a position to know. Statistics bearing on the growth of the cement tile industry were furnished in a paper read before the Iowa State Drainage Association, February 12, 1908, by L. L. Bingham, who said: "We may say that the making of cement drain-tile began as a business in 1903, and then only in hand-made 12x24-inch sizes. Not until the end of 1906 were the more common 4-inch to 12-inch machine-made cement tile put on the market and yet during the past year, the second season of their manufacture, the output was approximately 2,000 cars of 3,000 tile each . . . cement tile 40 inches in diameter and possibly a few of yet larger sizes were used in the past summer. What is called the Mud Creek Drainage Ditch, in Kossuth County, Iowa, requires about thirty-five miles of cement tile ranging in size from 8 inches to 36 inches. Many other large outlet drains are being built of cement tile. Dean A. Marston, director of Engineering Experiment Station at Ames, Iowa, says: "I think that any competent engineer would admit the possibilities of manufacturing cement drain-tile which will be thoroughly satisfactory in every way." At the beginning of the year there were over fifty factories for making cement tile.

## Professor Orton.

Reference has been made to a letter written by Professor Orton, which is being widely circulated. The substance of the letter is that cement drain-tile "is exposed persistently to the very influence under which it most rapidly deteriorates," namely, "the solvent power of water more or less saturated with carbon dioxide," and organic acids which "tend to leach out lime," while "the constant filtration of air through its walls into the soil tends to oxidize the sulphides in the cement into soluble sulphates," and finally that the soundness and qualities of cement pipe can not be told by the appearance. These are bare statements

and, as the context shows, are purely theoretical. They assume a state of affairs which never exists. In the first place, drainage water in farming communities is very far indeed from being saturated with carbon dioxide, which is, by the way, the weakest of all acids. Typical analyses of drainage water from cultivated fields are given in United States Department of Agriculture, Bureau of Soils Bulletin No. 26, "Investigations in Soil Management," pages 23 and 77. The average from twelve wheat fields shows only 53.5 parts of carbonic acid and 32.7 parts of organic matter in 1,000,000 parts of drain water, and the worst sample taken from a drain under a black marsh soil gave only 340.5 parts of carbonic acid in 1,000,000 parts of water. The average amount of carbonic acid in ground water and open ditches is less than three parts in 1,000,000. The chemical activity of such exceedingly weak solutions is trifling and is not liable to attack the tile because of possible neutralization of the acid by lime in the soil. The analyses show three times as much lime as carbonic acid in solution, and carbonic acid would react with lime already in solution before it would attack solid lime in a tile.

The Professor should also have known that sulphides are either entirely absent from cement or present in such a minute quantity as to be negligible, and the percentage of sulphates is also so small that every particle could be leached out after the concrete has set without weakening it. That air should be constantly filtering through a tile in one direction, while water is constantly filtering through it in the opposite direction, is almost too absurd to notice. Air can not go through the tile unless there is a difference in pressure, but since the pressure inside the tile can not be greater than that of the atmosphere, it would be necessary to assume a partial vacuum on the outside. Actually, the pressure outside is greater than atmospheric by the length of a column of water between the tile and the ground water level unless the ground water is below the tile when the pressure is the same on both sides. Finally, it is difficult to see why the Professor should think it is more difficult to tell a sound tile of cement than of clay. It is entirely a matter of experience on the part of the inspector.

Among the advantages which cement tile has over clay tile are these:

**Permeability.**—This can be controlled by the manufacturer, who can either make a porous tile or one that is water-tight. Porous tile give effective drainage throughout their length, while clay tile are impervious except at the joints.

**Durability.**—Cement tile grow stronger with age, while clay tile attain their maximum strength when first made. On this point J. T. Sherer of the Board of Public Works, Milwaukee, Wis., says: "In all places where we had to replace the sewers that were put in in the early history of Milwaukee we found the concrete pipe to be intact. For instance, only recently we were required to take up 12-inch pipe and replace it with 20-inch, and for the entire length that pipe was found to be in elegant condition—very much stronger than when first placed there. There was no defect or flaw from one end to the other."

**Frost Resistance.**—Cement tile can be easily distributed along the line of the ditch in winter when haulage is easy over the frozen ground, and will withstand alternate freezing and thawing without injury, even when partially immersed in water. Clay tile would be completely destroyed by such treatment.

**Uniformity of Shape.**—Cement tile are always true to the mold, whereas clay tile warp out of shape in burning. It is therefore easier to lay cement tile.

**Cost.**—Another advantage of no small importance is the fact that cement tile is cheaper in first cost, and the clay tile interests simply can not compete in price.

It is believed that the animus behind the attack on cement tile lies in the fact that tile-drains of large size have been planned in Kossuth, Palo Alto, Hancock and other counties in Iowa, under the direction of the boards of supervisors in each district. In the Kossuth letting the clay tile people were beaten by the cement tile interests, and shortly afterward at the Palo Alto letting the clay tile people were underbid again. As it was impossible to lower the prices of clay tile, so as to compete with any profit, the effort seems to be to frighten the boards of supervisors, county engineers and landowners, so as to shut out the use of cement tile in this class of work. The attack is meeting only with ridicule in that locality.

In conclusion, it may be remarked that cement tile factories are springing up in all directions to meet local demands, and yet are running behind in their orders. When sifted out, then the attack on cement tile is found to have no foundation in fact. It is a canard issued by the clay tile interests from selfish motives. The intelligent people of Iowa and other States are not being frightened, because they know the truth from experience. The effect will be to strengthen the position of cement tile at the expense of clay.

# CONCRETE ENGINEERING

## Increasing Use of Structural Tile.

The Mansfield Engineering Company, of Indianapolis, are among the important factors in the growth and development of modern fireproof construction. They are thorough believers in the use of structural tile, and the illustrations herewith, showing both exterior and interior views of the new reinforced concrete factory building erected for Fisher & Allison (the Prestolite Company) at Indianapolis, are an evidence of the increasing demand for this class of material.

The Prestolite Company, manufacturers of gas tanks for automobile car lights, etc., recently reconstructed several of their plants for the manufacture of gas and gas tanks, among which the plant at Indianapolis is the largest. This plant is indicative of the class of construction used in all of their new building work, including the new plants at Cambridge, Mass., and Astoria, L. I. The Indianapolis plant, here illustrated, is located within the central district of the city of Indianapolis and it is for this reason that a permanent fireproof character of construction was used and as pleasing an appearance given to the exterior as possible.

The building has a 69-foot front on South Street, with a depth of 195 feet, and is two stories in height, with a basement under a part of the first floor. The exterior view shows the general appearance of the building, the front of which is built up of Bedford stone and Adams glazed oriental brick. The side and rear elevation of the building show the reinforced concrete skeleton exposed with curtain walls of glass and vitrified tile building block.

The width of the building is divided into three bays, giving beam spans of 23 feet with a floor slab of combination tile and concrete, spanning about 20 feet between same, making the building ten panels in depth.

The floors are designed for a live load of 200 pounds per square foot, and by an accidental piling of the heavy gas tanks used in the business the construction was tested to about three times this load over an entire panel about six weeks after the floor was completed. Under this test the construction showed no signs of distress whatever.

The Kahn bar type of reinforcement, furnished by the Trussed Concrete Steel Company of Detroit, was used exclusively. The plans for the reinforced concrete work were prepared by the Mansfield Engineering Company, who also were the general contractors for the building.

The photos of the interior give a clear idea of the general construction of the building and also illustrate the excellent lighting possible by the use of concrete for this class of structure.



BUILDING OF THE PRESTOLITE COMPANY AT INDIANAPOLIS.

## Modern Amusement Park Near Chicago.

Concrete is being employed more and more where the safety of human life is a consideration. Heretofore buildings for amusement parks have always been considered good enough if built of the cheapest character of materials, because they were considered in the light of temporary structures. Now that these immense ventures are no longer regarded as experiments, but as permanent paying investments, more attention is being given to the character of material which enters into their construction. Frame buildings with stucco exteriors are about the most inflammable firetraps that can be built, and it is strange that in the light of the recent horrible holocausts resulting from fires in amusement places more attention is not being paid to this matter by the building inspectors and fire commissioners in the various communities. If a fire should get a good start in one of these pleasure parks where all the buildings are of this nature, and where sometimes even the walks are wood, it would be almost an impossibility to get the crowds out of harm's way without a tremendous loss of life. In the East some of the managers of these institutions have realized this and have built some of their buildings of concrete, but it remained for a man in Chicago to actually plan an institution of this character where all the buildings will be built of concrete and reinforced concrete. George Hofmann, of the well-known firm of Hofmann Brothers, brewers, of Chicago, is building, at a suburb near Chicago called Riverside, a series of concrete buildings which will house every kind of amusement device usually found in a pleasure park.

The entire venture will cost in the neighborhood of \$250,000, although these figures are considered rather conservative in the light of the immense undertaking as outlined to the Rock PRODUCTS representative who made a trip to the park.

The park proper will occupy a space of thirty acres, all enclosed, and includes a river which extends along the side of the beautiful grove which will be transformed as with a magic wand to a glittering array of amusement palaces. George Hofmann can not be considered as wholly in the light of a philanthropist, because the park is being built as a money-

making proposition. But he can be considered as public-spirited since he has taken into full consideration the safety of the thousands of people who go to this class of amusement. He figures that as the public has become educated to enjoy this character of amusement, he will provide it for them hedged about with all the precaution necessary for their well-being.

Work is already well under way, and the plans are practically completed for the entire series of buildings, which, however, will not be completed until the end of the present season. When asked when he expected to throw open Hofmann's Niagara Park, as it will be called, he said that he did not know, but that he was going to push things as much as possible without endangering the safety of the structures. The erection of this amusement institution was planned before the local option people "got busy" with the beautiful little suburb of Riverside, which is the home of wealth and culture. Mr. Hofmann has his "nerve" with him, they say at Riverside, as he has not allowed this to interfere with his plans in the least. He says that he will give them, and incidentally Chicago, for it is only a 35-minute ride from that city, a pleasure park free from the usual objectionable features and rowdyism found in these places and will cater only to the best class of people, especially the women and children, for whom special comforts will be provided. The park will not be only a night park, but a day park as well, where the better class of people will be provided with the usual rides, shows, etc., but all of a high class. The H. W. Sauber Construction Company, of Riverside, are the engineers and architects in charge of the construction. A concrete dam has been built across the river at a cost of \$60,000, and the waterpower thus harnessed will furnish the power for the amusement devices and the lights. The powerhouse will be built entirely of reinforced concrete and will have a tower 102 feet in height and 37 feet square. The water above the dam will be used for boating and pleasure launches. The boathouse, also of reinforced concrete, will be 211 feet long, 50 feet wide, with an 80-foot dome 105 feet high. In another part of the grounds will be the immense refectory and café, patterned after the famous Tabernacle at Salt Lake City. It will be 200 feet long, 55 feet wide and 105 feet high, without a single truss. The band stand will be 60 feet by 40, with a 45-foot tower. The sounding-board will also be of reinforced concrete.

In the way of adornment for the grounds an immense fountain of concrete will be built. It will be constructed in the shape of a giant pear with different colored glass in rows forming steps all around it. Electric lights will be placed on the inside.

The largest building of all will be the dancing pavilion, built also of reinforced concrete throughout. There will be four towers surmounting the structure at the corners. It will be two stories in height, with a dancing-floor 170 feet by 70 and a stage at one end with a concrete sounding-board. Around the dancing-floor will be a 20-foot promenade with a place for the spectators. There will also be a balcony and dressing-rooms and toilet-rooms.

Concrete walks with beautiful balustrades and tunnels from one part of the park to the other, under the street, are also features.

In order to relieve the monotony of the concrete surface both the exterior and interior will be bush-



INTERIOR VIEW OF THE PRESTOLITE COMPANY'S BUILDING AT INDIANAPOLIS.  
(Erected by the Mansfield Engineering Company.)

hammered and carved in fancy designs. Mr. Sauber, who has charge of the construction work, is a genius in his way, as he has accomplished some very artistic effects. Atlas Portland cement and crushed limestone are used throughout, and the effect is startling. One is tempted to doubt whether or not it is real stone. Three-quarter-inch wire mesh and 15-inch I beams are used in the reinforcing.

#### Concrete Grain Storage Tanks.

Among the most valuable products of American maize, commonly called corn in this country, are those of the great glucose factories. In the expensive plants which are required for this branch of manufacturing the value of concrete is being each year more generally recognized. The illustration herewith shows part of the plant of the Western Glucose Company at Roby, Ind., consisting of a brick elevator building with three reinforced concrete grain storage tanks recently completed. A fourth tank is not shown. The tanks have a combined capacity of 200,000 bushels. Grain received in the unloading sink from the cars, which will be unloaded with modern power shovels operated by electric power, may be turned into one or four receiving legs and elevated to the top of the building, where it may either be conveyed by 30-inch belt conveyors to the steep tanks or into the grain tanks.

J. K. Waechter of Chicago is the architect who designed these structures. Gindele & Co. were the general contractors and Atlas, Alpha and Universal brands of Portland cement were used in the construction.

#### Reinforced Roof.

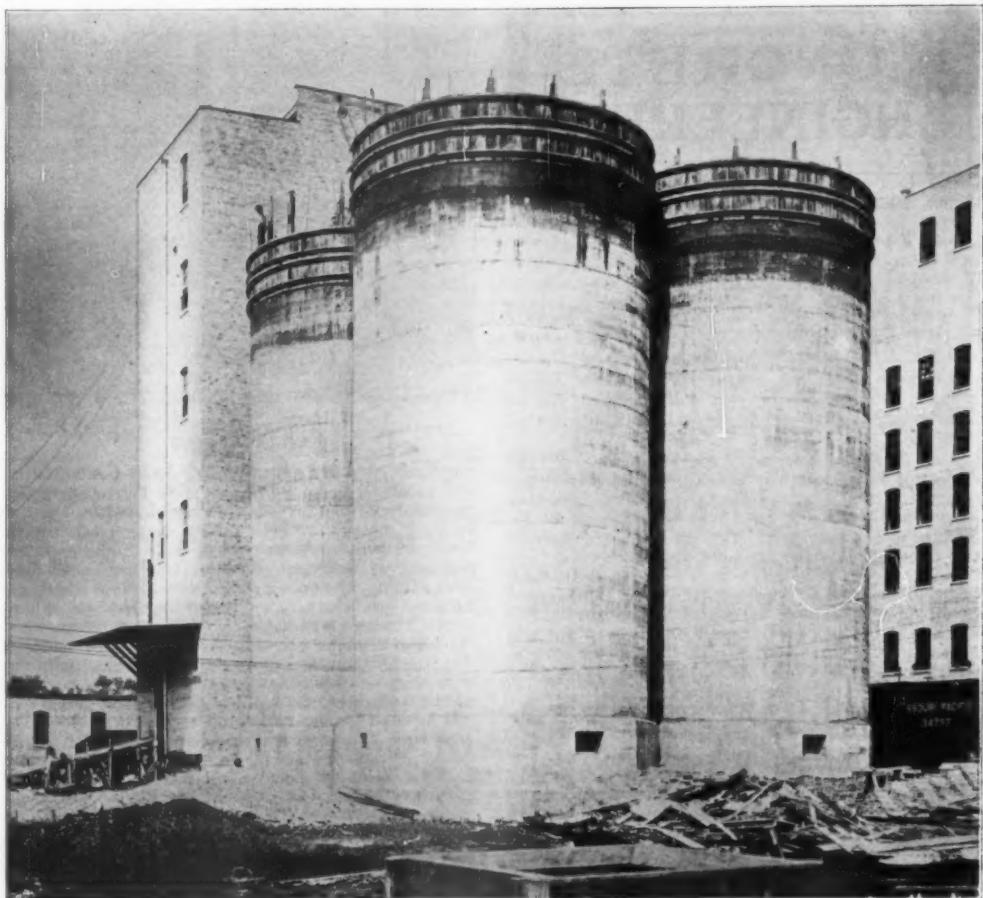
The Taxis-Harvey Construction Company, St. Louis, Mo., have made a good record with reinforced concrete roof work. Their slabs of concrete, finished on top like fine sidewalk work, and laid in place with reinforcing fabric after the usual method of building floor slabs, have been most successful. On this page is illustrated the method of construction employed in making the roof for the General Roofing Manufacturing Company's plant at East St. Louis, Ill. The whole building is of reinforced concrete with the single exception of door and window frames.

#### Building Mine Shaft of Concrete.

WILKES-BARRE, PA., June 13.—There is now being completed just across the Susquehanna River from this city a mine shaft different from any in the anthracite coal region, and one which indicates the change from the old style mining by which the easiest and largest veins were mined in the cheapest possible manner, to the new system of mining all the veins in the most scientific and a correspondingly costly manner.

This shaft is being sunk by the Delaware, Lackawanna and Western Coal Company on the flat land, the surface of which is only a few feet above low water mark of the river, and a location upon which it would have been deemed in the early days of mining the height of folly to sink a shaft, owing to the trouble with water. The company found it necessary, to reach certain small veins which years ago it was not deemed worth while to mine, to sink the shaft where it is.

It is being constructed in a novel manner. As it passes through water, quicksand and clay, it is con-



GRAIN STORAGE TANKS OF THE WESTERN GLUCOSE COMPANY.

creted, the walls being 7 feet in thickness to make them quite watertight and the shaft being 48 feet 10 inches long and 14 feet wide, inside measurement. This will be divided into three compartments, one for hoisting coal, one for an upcast airway and the other for a pump and ladderway.

In sinking the shaft a steel shoe 59 feet 6 inches long and 28 feet wide and in the form of an oblong with rounded corners was constructed. This was 30 inches high and with a fine cutting edge. A 15-foot pit was dug, and on the bottom, placed perfectly level, this big shoe was put.

The molds of wood for the concrete were placed on the upper edge of this shoe and built up to a height of 20 feet. Then excavations were commenced within the shoe, and as this work progressed the weight of the concrete and the shoe drove it down steadily through the sand, clay and quicksand, the concrete wall being renewed every 5 feet.

Great care had to be exercised to have the wall thus constructed sink evenly at each side. This process was

continued until a depth of 79 feet had been reached, when solid rock was encountered.

The rock was then blasted out to within 2 feet of the outer edge of the concrete wall and to a depth of 20 feet, and this was filled in with concrete, making a solid wall 7 feet thick for a depth of 79 feet, and a solid wall 5 feet thick for a depth of 20 feet. The rock excavation is now under way and the shaft will be sunk to a depth of 805 feet. It will cost \$200,000.

It will tap some twelve veins, many of which will not be more than 2 or 3 feet thick, and where the rock above the coal will have to be cut out until there is space enough for mules and mine cars. This work will all be expensive, but it will enable the company to get coal from veins which in the early days it was not considered profitable to mine, but which, with the improved methods now in vogue, can be made worth mining, despite the largely increased expense of getting at it.

It will probably take six months more to complete the shaft, and then a large breaker will be erected.

#### Test Concrete Piles.

BEAVER, PA., May 27.—For three weeks the masonry contractors for the \$3,000,000 bridge which the Pittsburg & Lake Erie has planned to cross the Ohio River here have been conducting a series of concrete piling tests under the direction of the railroad engineers. The tests have proven highly satisfactory and are considered to have been the most exhaustive conducted since the advent of concrete piling.

A single pile 14 inches in diameter and driven 40 feet into the gravel bore the weight of 65 tons. This weight was imposed by piling steel billets on a specially constructed timber platform. During the first 48 hours the load was imposed the pile sank one-quarter of an inch, and during the next week the distance sunk was imperceptible. When the pile was dug out there was not the slightest sign of crushing and the use of the piles has been authorized to be placed under the bridge piers. The load borne safely was nearly twice what a wooden pile of the same diameter would carry.

It is the intention to start the foundations of each of the massive concrete arch piers on 360 of these piles, which are capable of supporting a weight approximating 25,000,000 pounds.



REINFORCED CONCRETE ROOF FOR THE GENERAL ROOFING MANUFACTURING COMPANY, EAST ST. LOUIS, ILL.

**Well-Designed Concrete Dam.**

The concrete dam in the Pedlar River, which provides the water supply for the city of Lynchburg, Va., has given perfect satisfaction for more than a year. It furnishes ample water for all public and private uses at the present time, and its capacity is ample for the estimated increase of volume that may develop in the next half century. The dam is located at the foot of the Blue Ridge Mountains, twenty-five miles from Lynchburg. It is 420 feet long on top, with 150 feet spillway. The height at the crest of the spillway is 61 feet, and the whole abutment contains 19,000 cubic yards of concrete and 500 cubic yards of granite masonry.

It was designed by James H. Fuertes, consulting engineer, of New York, and constructed under the direction of H. L. Shaner, a local contractor. Chauncey G. Williams of Lynchburg constructed this dam, using 22,000 barrels of Old Dominion Portland cement in the entire work. Eminent engineers consider this one of the best-designed and constructed dams in the country.

**The St. Louis Coliseum.**

ST. LOUIS, June 12.—The new Coliseum, to replace that razed to make room for the new Central (Carnegie) Library, will be erected at Washington and Jefferson Avenues, occupying an entire half block, the old Urig's Cave site. The Coliseum proper will cost about \$275,000 and will have a seating capacity of more than 14,000. It will be surrounded on three street sides with a three-story store and office building, which will add materially to the total cost and rental value of the building. With the ground, the whole will represent an investment of approximately \$850,000. The total area is 203x291 feet.

The new Coliseum is made possible by the Business Men's League, which raised the necessary funds and which will own and control 70 per cent of the common stock, thus retaining the structure for the public benefit. The total capitalization is \$500,000, with a bond issue of \$100,000, the ground being a ninety-nine year leasehold.

The ground floor of the building will cover an area of 50,225 square feet. The arena of the Coliseum will be oval in shape, 200 feet long, 100 feet wide. It will be surrounded by a promenade 6 feet wide. Immediately surrounding the promenade there will be seventy-eight boxes, containing six to eight chairs each, with entrance from the promenade. The rows of seats begin immediately behind the boxes and extend in all directions to the walls of the building. There will be two balconies, with a seating capacity of approximately 9,000, which, together with approximately 5,000 on the arena floor, will provide a total seating capacity of 4,000. The arena will be covered with a sectional maple floor, which can be removed as occasion may require.

The style of architecture will be Italian Renaissance. The walls fronting on Washington and Jefferson Avenues and Locust Street will be of mottled granite brick, with terra cotta and stone trimmings. The building will be 70 feet in height; its construction will be fireproof, the balconies, stairways, boxes and all interior work to be reinforced concrete.

The main entrance to the Coliseum will be on Washington Avenue; three additional entrances will be provided on Jefferson Avenue. The entrance on Washington Avenue will be 68x23 feet, finished in Italian marble and decorated with ornamental plaster, with marble floor and stairways leading from either end of the lobby to the balconies above. Twenty-nine exits will be provided, and it is said by experts that in case of necessity the building can be emptied in three minutes. As a further means of safety, two fire



WATER SUPPLY DAM FOR THE CITY OF LYNCHBURG, VA.

escapes, each 100 feet long, on the alley side of the building, can be used as exits from the second and third floors.

A room 78x25 feet will be provided on the ground floor in the southern end of the building, which can be used for committee purposes during conventions.

A basement 12 feet high, containing 2,500 square feet of floor area, will be provided. This space will be devoted to café, bowling alley, billiard and pool rooms, etc.

The caves underlying this property are in the natural rock, arched with brick. They are built 35 feet below the street level and contain fully 10,000 square feet of floor space. They will be utilized as an attraction.

The Coliseum, when completed, will be the largest and best equipped building of its kind in the country. The general contract is in the hands of the C. L. Gray Construction Company, and the building will be ready for occupancy October 1. Partitions consist of reinforced concrete, with roof of steel. F. C. Bonsack is the architect. "Red Ring" Portland cement is to be used exclusively in the construction.

**Mexican Road Awards Big Contract.**

LOS ANGELES, CAL., May 30.—The biggest contract of its kind has just been awarded by the Harriman interests to Carl Leonhardt of Los Angeles for the building of important reinforced concrete railroad structures at Empalma, Mexico, on the Sonora line that is being rushed down the coast of the Gulf of California, to open up rich territory and connect with other roads in the central and southern part of the neighboring republic. The total amount involved in the contract is close to \$200,000; it calls for a roundhouse, shop buildings, an immense water tank and other structures needed at an important railroad headquarters.

Mr. Leonhardt will introduce an innovation in building the water tank, which is likely to cause the entire railroad world to sit up and take notice. The tank is to be of reinforced concrete, and is to rest firmly on the ground. A smaller tank built by Mr. Leonhardt at Anaheim is perched on concrete pillars.

Should the tank at Empalma prove a success—and there is every reason to believe that it will—the old-style steel or wood tanks now in use on railroads throughout the country are practically doomed, for the concrete tank, it is asserted, is much cheaper, especially in the long run, for it never rots nor rusts, and needs no repairs.

All the buildings are to be of reinforced concrete. Two reinforced stacks on the machine shop will be

150 feet high. The water tank will have a height of 90 feet and will be 40 feet in diameter.

**Pour Huge Concrete Wall.**

MILWAUKEE, June 16.—The committee on program for the laying of the cornerstone of the Auditorium met Monday afternoon in the Merchants and Manufacturers' rooms to agree on details for the ceremony. A noteworthy event in the construction of the Auditorium was the beginning last week of the pouring of the concrete for the intermediate wall of the building, the highest one of the structure, and making a sheet of solid concrete 240 feet long and 84 feet in height. Just how much time or how much concrete this job will require has not been figured out by Superintendent Lewis or J. C. Grieb, but they declare that this will be the largest wall of concrete ever laid in the State and one of the largest in the country.

**Several Large Contracts.**

NEW YORK, June 18.—The progress of the concrete industry, especially as applied to reinforced concrete construction of buildings in New York and vicinity, is evidenced by the following contracts recently secured by the Turner Construction Company, of 11 Broadway:

This company has secured the contract for the erection of a factory and warehouse six stories in height, 38x100, to be of reinforced concrete, for the R. U. Delepenha Company, at 39-41 Sussex Street, Jersey City. Bosworth & Holden are the architects.

A still larger contract is that for the construction of a reinforced concrete warehouse for F. Loeser & Co. of Brooklyn, at Schemerhorn and Livingston Streets, in that city. The structure will be 170x140, having eight stories, basement and sub-basement. The Livingston Street front will have brick and terra cotta trim. William Higginson is the architect, and work is under way.

The Turner Construction Company have also secured a contract for considerable reinforced concrete work to be done in reconstructing the plant of the Murphy Varnish Company at Chicago.

A new branch office of the Turner Company has been opened in Buffalo, N. Y., in the Builders' Exchange Building. From this office, which is under the direction of James L. Bruff, will be handled the company's rapidly increasing Western business.

**To Build Concrete Culvert.**

SCRANTON, PA., June 1.—The Pennsylvania Coal Company is building a concrete culvert 2,000 feet long. It is 4 feet deep and 5 feet wide. The culvert will be used to carry water to the mines.

**English Association of Concrete Workers.**

The Concrete Institute, which has been organized in London with the Earl of Plymouth as president, Sir Wm. Muther, Sir Wm. Preece and Sir Henry Tanner as vice-presidents, Mr. Edwin O. Sachs as chairman, Mr. E. P. Wells treasurer and Mr. A. E. Collins as secretary, announces the following objects: To advance the knowledge of concrete and reinforced concrete, and direct attention to the uses to which these materials can be best applied; to afford the means of communication between persons engaged in the design, supervision and execution of works in which concrete and reinforced concrete are employed (excluding all questions connected with wages and trade regulation); to arrange periodical meetings for the purpose of discussing practical and scientific subjects bearing upon the application of concrete, and to conduct such investigations and to issue such publications as may be deemed desirable.

With a few notable exceptions English engineers have done surprisingly little toward the advancement of reinforced concrete as a structural material. The great bulk of the reinforced concrete work being done in England is by the agencies of American and continental European firms. There have been various reasons for this, chief among which are the antiquated building regulations which have made economical reinforced concrete building construction a practical impossibility.

**Work on the Knoxville Bridge.**

KNOXVILLE, TENN., June 12.—W. A. Park, contractor, is pushing the work on the Tennessee River bridge. A reinforced concrete base in the shape of panels will be put down between girders and on this the brick floor will be placed. Engineer L. C. Carter is supervising the work of construction.

The recent disastrous floods had no effect whatever on the big concrete and steel bridge of the Kansas City Viaduct and Terminal Railway Company of Kansas City, connecting Kansas City, Mo., and Kansas City, Kan. It is now the only means of travel between the two cities for vehicular traffic.



THE NEW COLISEUM BUILDING, ST. LOUIS.

## ROCK PRODUCTS



**The National  
Builders' Supply Association**

Meets Semi-Annually.

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Official Organ, ROCK PRODUCTS.

**Now is the Accepted Time.**

The average builders' supply dealer seems to be imbued with the idea that any kind of an old place is good enough to do business in. His warehouses are usually tumbledown affairs and his offices about as uninviting as it is possible to find anywhere. Of course there are exceptions to this, and you will find some dealers have magnificent quarters in perfect harmony with the dignity of the business and equipped with every modern convenience. It is the exception, however, which proves the rule, and you will find a large percentage of dealers who, while in the business of selling building materials, never seem to buy any for themselves.

What would you think of a tailor who dressed in ragged, dirty clothes? Do you think you would give him your patronage? Not much. You would be very apt to think, if he did not wear a decent suit of clothes, that he did not know how to make them. A builders' supply dealer likes to see plenty of building going on and tries to encourage it in every way. He wants the other fellow to spend his money putting up new buildings and repairing his old ones, but he never seems to think about doing it himself. He sets a poor example by having a ramshackle building himself, and as for an office, it frequently looks as if it had not been cleaned up for months.

Why can't the building supply man see that of all the various kinds of business people he should have the best kind of building, since he sells the materials? His warehouses should be modern structures built of reinforced concrete, light, airy and dry. He should have his materials grouped in separate places or compartments, and not all thrown together in heaps and piles. In keeping cement, lime, plaster and such materials the utmost care should be taken so that they are not exposed or put against damp walls or in cellars. Materials of this kind deteriorate unless properly handled, and failures of various kinds are traceable to just such carelessness as this.

A sample-room should be an essential feature of every builders' supply depot. Here the contractor, builder, architect and consumer can meet and select the material. It will be found a great aid in making sales. If the consumer could be shown the difference in the materials he would buy a better grade as a rule. There is no better place to demonstrate the superiority of your goods. Have everything clean, neat and inviting. Have a nice office and keep it clean. Have a separate door for the drivers and workmen who have to come to the office on business.

There is no better time to make these improvements and changes than the present. You are probably not as busy now as you will be later on. Set the example of tearing down your old place and putting up a new, modern structure. Tell people that now is the time to build while material and labor are cheap, and that you are taking advantage of it by erecting a building yourself. Maybe some of them will do the same thing. You can at least set them to thinking.

Don't delude yourself into the belief that this little depression will last always. It will be followed by a mighty volume of business that will sweep over this country like a torrent, and those who are not prepared will be swept away by the tremendous tide. Prepare yourself now to take care of it when it comes, for it will come just so sure as the sun will rise on the morrow. Did you ever notice how bright the sunshine is after the rain? Well, after the clouds have blown away and the sun has come out again, we will see an era of prosperity the like of which has never been chronicled in the annals of history. We will see such a building era that what has been done in the past will seem as nothing. We are as a giant who has suddenly grown tired and who is taking a much-needed rest. He will be all the fresher when he awakens.

**A Progressive Concern.**

SAN JOSE, CAL., June 12.—Borchers Bros. have moved into their new establishment at 396 North First Street, opposite the S. P. depot. This firm realized some little time ago that with the growing demand for building material their old quarters would soon prove inadequate. They then purchased the present location and built one of the finest warehouses in this section of the country. In addition to ample storage capacity they have handsome offices and sample-rooms. The present site is very advantageous for receiving and unloading, as a track and team driveway runs the entire length of the building, accommodating five freight-cars at a time. This facilitates all shipping, making cartage unnecessary. They can load either their own or transient teams with very little time lost, which is also a great consideration. Borchers Bros. have been established for twelve years and have grown with the city. They carry a complete line of cement, lime, plaster, mortar colors, building paper, roofings, reinforcing steel, in fact everything necessary for the builder. They are very proud of their sample-room, which enables the consumer and contractor to make selections from a complete line of building materials.

**Their Interests Are Varied.**

PACIFIC, Mo., June 10.—The Koppitz-Smith Mill Company control varied interests. They have a flour mill and a grain elevator and deal in coal, lumber and building materials. They also have a branch at Eureka, Mo. Mr. Koppitz has been identified with the business for the past twenty years. They are agents for Lehigh Portland cement, Glencoe lime and Acme and Selenite cement plaster. They also handle Evans & Howard and Blockmer & Port's clay products. They say they have enjoyed a fair spring trade and that the outlook is encouraging.

**Doing an Extensive Business.**

PORTLAND, O., June 9.—Nottingham & Co., located at 141 Front Street, are among the most successful building supply dealers in this section. The firm was established in 1882 by C. W. Nottingham. Eleven years later the firm was incorporated with the following officers: C. W. Nottingham, president; C. W. Klippel, secretary; Irving Nottingham, manager of shipping department, and A. L. Carson, manager of sales department. The firm does an extensive business in Oregon, Washington, Idaho, Montana, Utah and Colorado. They handle a full line of Portland cements, plasters, limes and sewer pipe as well as other classes of building materials.

**Chicago Agency for the Atlas.**

The Atlas Portland Cement Company have appointed the Blocki & Brennan Company, Inc., 330 Dearborn Street, sole agents for the City of Chicago. W. F. Brennan, the president, was formerly in the railroad and contracting business, and well known as an Alderman from the Twelfth Ward and Deputy Commissioner of Public Works. F. W. Blocki, the treasurer, was formerly a fireproofing contractor and served two terms as Commissioner of Public Works under Carter H. Harrison's administration, and one term as City Treasurer. For the last ten years he has been in the general contracting business. The new firm will devote their entire energies to the sale of Atlas Portland cement and will carry a large stock distributed at various yards all over the city of Chi-

cago. One thing which they wish distinctly understood, however, is that they will under no circumstances sell cement at retail. They will sell at wholesale only. One reason for the establishment of a large number of distributing points is to enable them to deliver on short notice to any part of the city.

**Leading Dealer of Southern California.**

LOS ANGELES, CAL., June 10.—Carl Leonhardt is by profession a cement expert. He was born in Lendenscherdt, Westphalia, Germany, and studied cement chemistry at Aachen. In 1885 he was called to America to take charge of a cement factory which was projected in Texas, and from there he came to California in 1887. From that time to the present he has had charge of many great cement undertakings, particularly of those where an expert knowledge of the subject is required.

Mr. Leonhardt is one of the largest building contractors in Southern California, and at the junction of Mill and Industrial Streets he has a fine, substantial cement-constructed warehouse. In this building there is a cement-concrete girder 102 feet long, without a support, which is one of the remarkable specimens of this class of work in the city. Another example of Mr. Leonhardt's building operations on a large scale in reinforced concrete construction is the Hotel Hayward building at Sixth and Spring Streets. He also built what he supposes is the largest cement smoke-stack in the world. This is at Oxnard, where he erected for Henry T. Oxnard the great beet sugar factory situated at that place.

Mr. Leonhardt is also the vice-president of the Grand Canyon Lime and Cement Company, whose works are at Nelson, Ariz.

Few men in Los Angeles are better known than Mr. Leonhardt and he may often be seen speeding about in a high-class automobile from building to building which he has under way. The modern contractor, who employs hundreds of men, naturally seeks the advantage of time-saving appliances.

Carl Leonhardt is a born builder, and his handiwork can be found in sugar mills from Hawaii to Michigan; in irrigation works all over the Southwest; in the noblest buildings of Los Angeles and San Diego. He has been a pioneer in many things, notably in the use of cement. The era of "reinforced" buildings, for which Los Angeles is perhaps more noted than any other city, was inaugurated by him. Cement is his hobby and Article I. of his "Thirty-nine Articles of Building Faith." Yet the Huntington building and the H. W. Hellman building, indisputably the best steel-frame buildings in Los Angeles, were erected by him.

He has also been engaged in building dams and other irrigation works in the far Southwest. A unique job recently completed by him is an immense concrete water tank which stands 78 feet high, while the tank proper, of cylinder form, is 32x38. The roof is also of two-inch cement construction. On this job the "Ideal" brand of the Portland Cement Company of Denver, Colo., and also the "Sunflower" brand of the Western States Portland Cement Company were used.

In paying a visit to the warehouse of Carl Leonhardt, after watching for a while the operating of his stone-crushing plant near-by, I met in the laboratory F. E. Martin, who told me he was formerly at La Salle, Ill. Mr. Martin said that Mr. Leonhardt had the only private laboratory in Southern California—in fact, that conducted by the city of Los Angeles was the only other. Mr. Leonhardt not only requires large quantities of cement as a contractor, but also sells a great deal. It is his practice to have every carload he handles tested. Mr. Martin showed me a test for lime by taking a sample of a car of cement and using as a standard a sample of Western States brand. He poured some muriatic acid on both and I noticed that the Western States sample remained very nearly dormant, while the other sample exhibited a boiling action.

Going to a closet, he took a sample briquette to show test for tensile strength—a sample of Western States eighteen days old, using a Fairbanks-Morse tester, which broke at 945 pounds. He said a test of seven days broke at 845 pounds and one of twenty-four hours at 325 pounds. In his tests of Red Devil brand (Utah) he found it to run very close to Western States, above the average. Mr. Martin stated he had for an associate Alex Chalmers.

**Big Cement Order.**

PITTSBURG, PA., June 10.—An order for 60,000 barrels of cement has been placed with a Pittsburgh firm through the Stewart Supply Company of Williamsburg, Pa.

The cement is to be used for the construction of the new Raystown Water Company power dam a few miles above Huntingdon, Pa. It is to be delivered by carload lots and calls for 600 cars, the deliveries to be started at once.

# SAND-LIME BRICK

## Residence Entirely of Sand-Lime Products.

The employment of sand-lime brick for residences is meeting with favor among architects, who are beginning to appreciate this character of material more and more. One of the prettiest examples of this style of construction is shown in the accompanying photograph of a residence in Cedar Rapids, Iowa. Dieman & Fiske of that city are the architects. The unusual feature of this house is that everything used in its construction excepting the interior, which is of hardwoods, is a sand-lime product. The bricks were made in the usual manner, but the caps, sills and blocks used in the construction of the porch and steps were made in molds similar to those used in concrete work of the same character. The house presents a very beautiful appearance, being snow-white in color. The residence was built for J. W. Pichner, the secretary and treasurer of the King's Crown Plaster Company, at Cedar Rapids, who are manufacturers of sand-lime brick on a large scale.

## A Prosperous Plant.

GRAND FORKS, N. D., June 13.—The plant of the Denbigh Brick Company at Denbigh is the only factory in this section manufacturing sand-lime brick. The plant has now been in operation less than one year, but so active a demand has been built up for its product that the company finds it impossible to keep up with orders, although it is turning out from 18,000 to 20,000 daily. The main building of the plant is an immense structure 36x90 and two stories high. The Denbigh Brick Company is capitalized at \$100,000. Its officers include Joseph Roach, Minot, president; J. A. Pendroy, vice-president; O. B. Jacobson, secretary and manager. Directors: Joseph Roach, Minot; A. C. Nedrud, Minot; Jacob Ohmart, Denbigh; James A. Pendroy, Denbigh, and Charles A. Pake, Denbigh.

The company is now filling an order for 400,000 brick to be shipped to Culbertson, Mont.

## Plant and Bonds Sold.

INDIANAPOLIS, IND., June 6.—The Indianapolis Composite Brick Company was purchased by a company of its stockholders yesterday at a receiver's sale through William J. Beatley, who paid \$9,700 for the plant, and Aaron O. Hill, who paid \$6,000 for the first mortgage bonds. The report of the receiver, C. B. Whitson, has been approved by Judge Merle N. A. Walker of Probate Court.

## SPECIFICATIONS ON LIME FOR USE IN SAND-LIME BRICK MANUFACTURE.

By H. O. DUERR.

(Address to the National Lime Manufacturers' Association, at its Chicago convention, February 6 and 7, 1908.)

As the magnitude of the sand-lime brick industry, and its relation to your industry, may not have been brought to your attention, I feel that it is not out of place for me to show you how vitally your are interested in the success of the sand-lime brick industry, and how essential we feel it is to our interest that you realize the necessities of our industry so far as we are affected by lime and its proper preparation.

The sand-brick enterprise is approximately seven years old: the first plant was put in operation in 1901 in this country. Since that time about 135 plants have been built, of which 115 are now in operation. There is invested approximately \$10,000,000 in capital.

These plants have a capacity of 700,000,000 bricks per year. To make these 700,000,000 bricks requires not less than 100,000 tons of lime, or 2,500,000 bushels—the output of 36 kilns. I am sure this means something to you, gentlemen, and especially as the industry is still very much in its infancy.

No sand-lime brick plant can be a success unless it is able to purchase a good quality of lime. Sand-lime bricks are made by mixing approximately six per cent (6%) of caustic lime with ninety-four per cent (94%) of sand. This mixture is pressed into brick, placed in a hardening cylinder, and steamed for a period of ten to fifteen hours. This steaming action produces a chemical reaction between the calcium oxide in the lime and the silica in the sand.

It has been clearly demonstrated that the strength of the bricks depends entirely upon the amount of the cementing material produced by the action of the calcium oxide upon the silica of the sand. There is no reaction between any of the other ingredients. On the contrary, whatever impurities the lime may contain are deleterious. Therefore, whatever we buy in the shape of lime that is not calcium oxide we are paying for without any return: in other words, we are being hurt by reason of its existence.

I do not mean to say that we cannot use a lime that contains magnesia, or that contains silica or other impurities, but I do mean to say that we are paying for something that we do not want.

In addition to this, the presence of these impurities, such as magnesia, makes the preparation of this infinitely harder and more expensive for us.

There are other conditions which are also injurious to our industry—conditions over which we have absolutely no control, which we cannot remedy, but which you can, and that is, improperly burned lime—lime which has been overburned or lime which has been underburned.

When you overburn your lime you make it difficult for us to slake it. It takes longer; requires more time to properly slake it. When you underburn your lime, you are giving us a large percentage of what is called "core"—what I would call "limestone." Limestone is not only of no use to us, but it retards the proper slaking of that portion of the stone which is burned. You are not giving us honest results, because you are selling us lime and giving us limestone.

There is still another condition. That is lime which has been burned in improperly constructed kilns. Some years ago we received a carload of lime from a plant which had supplied us with lime for more than a year. It had been extremely satisfactory; had worked well; but when we undertook to use this car of lime we found, first, that we had great difficulty in slaking it; second, when the cylinders were opened we found, instead of brick, the worst mess that it is possible for you to imagine. There was not a whole brick in that cylinder. We knew that such troubles were encountered by an improperly hydrated lime containing magnesia, but we also knew that the quarry from which this lime came had a very small percentage of magnesia in its rock.

We immediately had the lime analyzed and found, although apparently properly burned, that it contained 28 per cent of calcium carbonate. About the same time I read a report given by Mr. Miller, the Canadian geologist, stating that he had found that when limestone was burned in a so-called pot kiln, where there was insufficient draft to carry off the carbonic acid gas, the lime at a dull red heat would retake the carbonic gas and become limestone again. Upon investigating the lime from its source, we found that the carload that had been shipped us, instead of being the lime which we had been accustomed to getting, having been burned in the so-called patent kiln, was lime that had been burned in an old-fashioned pot kiln, and that Mr. Miller's statement was correct.



RESIDENCE OF J. W. PICHNER, CEDAR RAPIDS, IA.

This experience cost our company more than \$500. You, gentlemen, cannot afford to have such experiences happen to us, for we are too good and large a customer for you to lose.

I am glad to say that the lime industry has made great progress in this country in the past decade, not alone in its magnitude but also in its method of production, but I want to assure you that the successful limeburner of the future will be the man who knows the analysis of his rock, who takes the same care in selecting it and burning it and placing it on the market as the cement manufacturer does today.

It will be absolutely necessary for our own protection to buy lime, not by the ton as you may see fit to send it out, but by the per cent of its causticity. By the per cent of causticity I mean the absolute amount of calcium oxide or quicklime present, no allowance being made for the lime which is combined as hydrate or carbonate. This calcium oxide is the only element in lime which is valuable to us, and the sand-lime brick men will be compelled to purchase their lime under the same specifications as high calcium lime when sold to chemical industry, and those of you who will be in a position to furnish lime under those conditions will be the ones who can command the market for our business. A few cents extra cost per ton means nothing to us as compared with the absolute guaranty and assurance that the material which we are buying is what we require.

The lime industry, like a great many others, has been handed down to us from generation to generation, and you have been satisfied to accept the methods and judgment of your forefathers, but, gentlemen, we have reached an age in which old methods will not be accepted, and it behoves you to get in line and to adopt such methods as will enable you not alone to hold our trade, but to get the trade of your less active and alert competitor.

There is just one way in which to do this; that is, place yourselves in a position not only to inaugurate all the economies possible in your business, but to produce a material which is the best possible that can be produced.

From my knowledge of the progress made in lime-burning and results that some of the burners have obtained, I am satisfied that you can get the highest efficiency and best results from your stone in a modern equipped plant at less cost than you are now obtaining in the old-fashioned way.

This, of course, necessitates a larger capital investment on your part, but you will be surprised at the results and will find that you will soon get this additional investment back in additional dividends and business.

In the last few years I have come intimately in contact with leading engineers and architects in the country who are interested in building and building materials, and I am led to appreciate the fact that they are becoming more *stringent* in their requirements and more intelligent in their knowledge of what is good and what is bad, so that I am satisfied that it will not be long before it will be a question of not what is the price of your lime, but what is the quality of your lime.

At \$5 per ton, every 1,000 brick requires approximately 75 cents' worth of lime; for every 1 per cent of lime used it means 12½ cents per 1,000 brick. We find that since we get but 80 per cent value from the lime we are receiving because of the impurities in that lime, we could make an equally good brick with one-fifth less lime if that lime were pure. Consequently, if we were assured an absolutely pure lime, we could afford to pay you \$6 per ton for that lime and still be money in pocket. The actual cost of the lime per thousand bricks would be no greater to us, and the saving in troubles caused in the plant over the use of impure lime is more than I can take the time to enumerate here.

Think of the man's peace of mind who comes to his plant each morning knowing that when the cylinder is opened he is going to have a perfect batch of brick, as compared with the mind of the man who goes to his plant each morning with fear and trembling, not knowing what to expect.

The sand-lime brick industry has had more difficulties to overcome, not alone in the plants but in dealing with the public, by reason of the condition of the lime which they use, than in all the other items put together.

I have given you the figures of the condition of the sand-lime brick industry at the present time. All new industries have a stage of relapse. That has been the case in the sand-lime brick industry in the last year or two, but the tone at the present time is one of recovery, and the outlook is exceedingly bright for a rapid increase in this industry.

In my conversation with the various manufacturers of sand-lime brick I find that they have a very hopeful tone, and that the prospects for the next few years are exceedingly bright for the establishing of many more plants.

It will not be long before in many sections of the country where clay is scarce or of poor quality the chief building material will be sand-lime brick, and I look for an increase which will make in the next ten years the sand-lime brick industry one of the largest industries in the building material trade of this country, and instead of your selling two and one-half million bushels of lime annually, you will sell many times this amount.

Such was the result in Germany. There are many sections there today where the sand-lime brick predominates, one plant alone near Berlin turning out annually 75,000,000 brick, requiring 300,000 bushels of lime.

The progress in plants was very slow in the first few years in Germany; today there are over 400 plants, most of them having been built in the last five years.

We surely have a right to expect that this large country will do much more than has been done in Germany.

In conclusion, let me reiterate, gentlemen, you cannot afford to let us suffer any longer than it will take you to go home and make such changes in your organization and plant as will overcome these difficulties.

## In the Good Old Wintertime.

A very important advantage of the sand-lime brick over any other building material was developed and appreciated during the cold weather of the past winter. A Northern manufacturer delivered some hot brick fresh from the hardening cylinder on the job, one cold morning in the early part of the winter, the brick being used for the inside facing of a large factory building, leaving the white surface of the sand-lime brick as the finish of the interior. The brick that were delivered hot in the early part of the day remained warm for six or seven hours, and the brick-masons at once expressed their appreciation. The contractor was no less pleased when he found that the cold weather made no difference at all in the amount of wall that the masons were able to build with the warm brick, and there was no necessity for worrying about the mortar freezing. The next order that came for the delivery of brick expressly stipulated that the manufacturer was to deliver hot brick if possible, and as it was no inconvenience whatever, the request was complied with. Perhaps for this or some other reason every brick that the plant could manufacture during the cold weather was disposed of as fast as made, and customers as well as bricklayers learned to ask for those hot brick. The warm brick in the wall keeps up the temperature until the mortar has time to get a good set. This advantage of the sand-lime brick is one that the contractor will readily understand and will be appreciated by the workmen to such an extent that it will have the effect of popularizing the material wherever the idea is introduced in the proper way.

The Watertown Sand Brick Company, Watertown, N. Y., filed with Referee in Bankruptcy Atwell June 12 a statement showing assets of \$40,336 and liabilities aggregating \$39,013.

A company has been formed at Marion, Ind., with M. J. Achor secretary and treasurer and Frank Modlin manager, to market the product of a sand and gravel pit which has just been opened near the Snider preserve plant.

George E. Dungan, receiver for the Salesville Sand Lime Brick Company, Muncie, Ind., filed a report of the sale of the property on June 9. Henry C. Schlegel of Daleville and William N. Durbin of Anderson are the purchasers, the consideration being \$350.

## ROCK PRODUCTS



## American Ceramic Society.

The Board of Directors of the American Ceramic Society announce that the annual summer meeting this year will be held in Denver, Col. The 1906 meeting having been held at Beaver Falls, or in the central part of the society's territory, and the 1907 meeting in Schenectady, which is in the eastern district, it seemed right to give the western district the preference this year.

Special rates and special accommodations have been arranged for. The party will leave Chicago Monday, June 13, at 9 a. m., on the A. T. and S. F. flyer and will arrive in Kansas City the same evening. The St. Louis delegation will be picked up on the way. The time of arrival at Pueblo is 12:20 Tuesday. At Pueblo there are several clay works of importance, and the Colorado Fuel and Iron Company's fine blast furnace and as many points of interest as possible will be visited during the afternoon and evening. On Wednesday, the 15th, at 6 a. m., the party will leave Pueblo, reaching Colorado Springs at 7:45 a. m. Here the Van Briggle Pottery Company's plant will be visited, and the company promise a cordial welcome. The afternoon will be spent in seeing the natural beauties of this spot. Manitou, the Garden of the Gods, Cheyenne Cañon, Pike's Peak, and many other star attractions. Leaving Colorado Springs at 7:15 p. m., Denver will be reached at 9:45 the same evening. On Thursday morning a trip will be made to Golden, where some of the richest and most remarkable clay deposits in the West are located. The Colorado School of Mines will also be visited. The formal excursion will come to a close on Thursday evening, June 16, the party breaking up to pursue their individual plans from that time forth.

The low rate of \$30 has been secured for the round trip from Chicago to Denver, and proportionately low rates from points east of Chicago. Further particulars may be had by addressing Edward Orton, Jr., secretary, Columbus, O. July 1 is the latest date at which reservations can be made. On account of the wonderful opportunities of the summer trip to Colorado, members are invited to bring their wives and families. Those who have not yet taken the needful step to do this are advised by the secretary not to put it off, and he informs Rock Products that at least one of the A. C. S. brethren has already accepted this suggestion and will be there with his bride.

## Farmers to Erect Brick and Tile Plant.

MASON CITY, IA., June 1.—A new enterprise has been launched here by officers and leaders of the farmers' co-operative societies of Iowa and others in the formation of the Farmers' Co-operative Brick and Tile Company, capitalized at \$400,000. Among those interested are G. C. Messerole of Gowrie, secretary of the Farmers' Grain Dealers' Association; E. G. Dunn, a traveling representative of the same society; J. H. Brown, president of the association, and T. L. Flemming, editor of the *Co-operative Journal* of Chicago. The stock is divided into 200,000 shares of common and 200,000 of preferred stock. A tract of nearly 300 acres of clay land has been purchased near here and the company will begin at once to erect a plant. The officers are: President, William Colby of Mason City; vice-president, G. C. Messerole of Gowrie; secretary and manager, W. H. Gleason of Mason City; treasurer, W. L. Flemming of Armstrong; directors, J. A. Sullivan of Mason City, T. L. Flemming of Chicago, J. H. Brown of Rockwell, G. T. Hughes of Mason City, and E. G. Dunn of Mason City.

## Installing Machinery for Vitrified Brick.

LOS ANGELES, CAL., June 5.—Between seventy-five and one hundred operatives will be given employment by the new brick plant of the Union Brick and Tile Factory at Santa Monica, machinery for which is now being installed.

The company is composed of Los Angeles people. Joseph Beech is president of the company, T. J. Griffin is vice-president and general manager, and H. B. Stafford is secretary.

Mr. Griffin intends that the company shall be turning out vitrified brick within sixty days. It is stated that the only known deposit of silicate clay in California is the one at Santa Monica, which is known to cover more than sixty acres as far as has been prospected, and is six feet in thickness.

## To Test Texas Clay.

ORANGE, TEXAS, June 15.—Last week several barrels of Orange County brick clay were shipped to Ohio to ascertain its suitability for the manufacture of vitrified brick, tiling, clay culverts and other products of the kind.

J. F. Stoneburner has made several tests and says he is certain that the Orange County clay is as good as can be found anywhere in the United States. He has a small clay jar that he made in Ohio four years ago from this clay, and states that the material works up perfectly.

## Tile Company Elects Officers.

WINCHESTER, IND., May 30.—The following officers have been selected by the Winchester Tile Company, which operates plant just north of this city: B. F. Wilmore, president; J. E. Hinshaw, vice-president; George Coats, secretary; Seth Hinshaw, treasurer. The officers, together with J. M. Carver and James Eagy, make up the board of directors.

## Million-Dollar Company Formed.

LITTLE ROCK, ARK., June 3.—Articles of incorporation were filed this morning in the office of the Secretary of State for the Hot Springs Clay Products Company, a concern formed by Hot Springs business men for the purpose of developing the clay products of that vicinity. The company is capitalized at \$1,000,000, with \$800,000 subscribed. The incorporators are Col. Lee Worthington, president; C. L. Shattuck, vice-president; Ed. H. Johnson, secretary, and J. B. Henderson, treasurer. Hamilton Williams is also one of the incorporators.

Colonel Worthington has been for a number of years experimenting in the clay products field, and has a well established pottery plant already in operation. The supply of raw material is of the very best quality and practically inexhaustible.

## Weight of Building Materials.

The following convenient table of the approximate weight per cubic foot of various building materials is furnished by a leading architect and consulting engineer and will often be found useful to Rock Products readers:

METALS.	Weight.
Bronze	552
Copper	550
Iron, Cast	450
Iron, Wrought	480
Lead	712
Steel, Structural	490

## TIMBER.

Cedar	23
Chestnut	41
Cypress	29
Fir	32
Hemlock	25
Oak, White	50
Pine, White	24
Pine, Yellow	35
Spruce	25

## MASONRY.

Asphalt	130
Blue Stone	160
Brick in Lime	120
Brick in Cement	130
Cement, Portland	90
Conecrete	140
Granite	160
Gravel	165
Limestone	120
Marble	170
Sandstone	165
Slate	145
Terra Cotta	170
Tile	110
	115

The Board of Control of Norfolk, Va., has ordered 50,000 paving brick from W. R. Mayo & Sons, to cost \$9 per thousand, f. o. b. Norfolk.

The Auglaize Tile Company has been incorporated at New Knoxville, O. Capital, \$10,000. Incorporators: George W. Hall, Ernest Holtkamp, William D. Arnett, Wilhelm Neumeyer, W. H. Lutterbeck and H. W. Eversman.

At the annual meeting of the Ostrander Fire Brick Company in May at Ostrander, N. Y., the following directors were re-elected: F. A. Ostrander, Francis N. Mann, Jr., J. K. P. Pine and J. W. F. Podmore. H. W. Gardiner was elected a director to succeed S. A. Peterson, deceased.

The Kansas City Vitrified Building Brick Company, Kansas City, Mo., has been incorporated with Frank J. Schinnick as president. The capital is \$125,000. The company is to operate a plant with a capacity of 80,000 brick a day at Thirty-third and Genesee Streets, using a new process.



## Big Demand for Sand.

PORTLAND, ORE., June 9.—Sand and gravel for building purposes is in as great demand in Portland this season as at any time in the history of the city, according to dealers in that class of building material, and the inference is that there is just as much building in progress as last year, when everybody conceded that there was a "building boom" on. Sand and gravel are used in the construction of concrete basements and in reinforced concrete walls and ceilings, and there are over 100 teams constantly occupied in delivering it to various parts of the city. A reduction of 50 cents a load has recently taken place in the material, \$2.50 being the present charge, against \$3 last year.

Sand used in the mixing of concrete is dredged from the bottom of the Willamette River, a short distance above its confluence with the Columbia, and is therefore conveniently obtained for building in the city. Gravel comes mostly from the east bank of the Willamette between Madison Street bridge and Sellwood. Three firms are engaged in dredging the material and hauling it to points where it is needed. It is said those engaged in the business have done remarkably well the past five years.

## Operations in the Pittsburg District.

PITTSBURG, PA., June 18.—The Pittsburg sand companies, operating sand dredges in the Allegheny, Monongahela and Ohio rivers in the vicinity of this city, have started work for the season and there are a half dozen or more of these plants at work at the present time. The deposits of sand and gravel have been particularly heavy during the past six months on account of the unusual number of high stages of water during the early spring, and the quantity reclaimed will be large.

The big sand-crushing plant of the Fitzpatrick Glass Company at Falls Creek, Pa., which has been idle for several years, was again started up last month, and since the first of June, has been running about to its capacity. The plant is now being operated by the Falls Creek Washed Sand Company of that place, and sufficient business has been booked to insure the steady operations of the entire plant for the remainder of the summer.

The Kickapoo Sand and Gravel Company, Attica, Ind., has been incorporated. Capital, \$15,000. Incorporators: P. A. Stewart and others.

The Ohio Falls Sand and Gravel Company, Louisville, Ky., has been incorporated. Capital, \$15,000. Incorporators: Ben Humpich, Henry L. Kremer and Annie Leavering.

John Sours, roadmaster of the C. P. & St. L. Railroad, has opened a gravel pit south of Peoria, Ill., and is taking out material for the spring ballast.

The Contractors' Sand Company, St. Joseph, Mo., has been incorporated. Capital, \$21,000. Incorporators: William Land, James Nation, B. W. Robinson, M. O. Land and Rosa A. Land.

The Western Sand and Gravel Company has been organized at Farmington, Ill., with J. Howard Payne, of Monmouth, Ill., as treasurer and manager.

The Burke-Andrus Sand Company has been incorporated at Ft. Smith, Ark. The company consists of M. C. Burke, E. L. Andrus and John H. Vaughn. The capital stock is \$25,000, three-fifths of which has been paid in.

The Grand Rapids Gravel Company, Grand Rapids, Mich., has filed notice of dissolution. The notice, which is signed by L. P. Oltman, W. G. Brummeler and R. J. Brummeler, a majority of the stockholders, states that the company has disposed of its franchises and property.

The jury in the Circuit Court at La Porte, Ind., in the case of the Lake Shore and Michigan Southern Railway Company against the Lake Shore Sand Company, awarded the sand company \$13,000 for a 48-acre tract of land condemned by the Railway Company for railway purposes at Miller's, Ind. At the time the land was condemned the appraisers fixed the value at \$27,000 and from this award the sand company appealed. The railway company contended that the land was worth only \$9,000, while the sand company claimed \$316,000.

## SAND KNOWLEDGE.\*

### Testing, Grading and Mixing for Perfect Aggregates. Home-Made Testing Apparatus.

BY JAMES F. HOBART, M. E.

Second Installment.

The author of this most valuable treatise, which was prepared and edited especially for ROCK PRODUCTS, is more especially interested personally in the manufacture of sand-lime brick. The subject has been handled, however, in such a manner that what is here said applies equally to concrete in all its branches. Practically every failure in the manufacture of concrete commodities as well as sand-lime brick could be avoided with the use of the information contained in this series of papers. Mr. Hobart is an expert on sand, and the clear, concise and scientific manner in which he sets forth his facts and deductions stamps him as an authority. This treatise will be concluded in the July number of ROCK PRODUCTS and will later be reprinted in book form.]

#### TESTING SAND FOR VOIDS.

The next step is to prepare for the void test. Withdraw the plunger and with a stick, a glass rod, or some other convenient implement, loosen the top portion of the sand in the gauge barrel. For sand finer than No. 80 the grades are apt to pack in the gauge and must be loosened as described. The coarser grades will not require much if any stirring in order to pour them out of the gauge. Shake out a portion of the sand and test with the plunger, until, with the charge well shaken, the gauge indicates just 10 centimeters left in the gauge. Care must be taken to measure the quantity very accurately for this test, and the plunger must be seated fair and square upon the entire top surface of the well-shaken body of sand in the gauge.

Having brought the plunger to the 10-centimeter mark, pour all the sand into the scale pan and weigh it, recording the weight carefully. From the sand in the scale-pan which constitutes the 10 cubic centimeters, pour enough back into the gauge to fill loosely to the 10-centimeter mark again, the sand remaining in the scale-pan being again weighed by itself and its weight deducted from the weight of the shaken down 10 cubic centimeters. The difference in weight is the weight of the sand loose, while the original weight is the weight of 10 cubic centimeters well shaken down in the gauge.

The actual operation is as follows:

No. 16 grade of Lake Erie sand—

1 ounce, loose in gauge, 1.16 c.i. = 92.5 lb. cubic foot.

1 ounce shaken in gauge, 1.02 c.i. = 104 lb. cubic foot.

By calculation:

1 ounce = .0625 pound and fills 1.16 cubic inches. Then 1 cu. in. = .0625 ÷ 1.16 = .0539, and one cubic foot weighs  $1728 \times .0539 = 93$  pounds.

For the shaken sand:

It weighs:  $.0625 \div 1.02 \times 1728 = 105.7$  pounds, cubic feet.

The weights derived by both methods agree quite closely, the variation being caused evidently by imperfect hand graduation of the density gauge and the slight error due to reading that gauge.

The void test is as follows:

10 c.c. loose sand, weighed 14.8 grams.

10 c.c. shaken sand weighed 16.5 grams.

A further test of the accuracy of the weight to the cubic foot may be made from these figures. It will be noted that the weighing and measuring has changed from the American, or English system, to the French, or metric system. This is for the ease with which weight and bulk denominations interchange by the metric system. For instance: The loose sample of sand measures 10 cubic centimeters and weighs 14.8 grams. Were the sand the same weight as water then it would weigh 10 grams also, for one centimeter of water (at a certain temperature) weighs exactly one gram. Hence the sand is  $14.8 \div 10 = 1.48$  times heavier than water. As water weighs 62.5 pounds to the cubic foot, the sand will therefore weigh  $62.5 \times 1.48 = 92.5$  pounds to the cubic foot. And the shaken 10 c.c. of sand will weigh  $62.5 \div 10 \times 16.5 = 103.12$  pounds to the foot.

But the weights to the cubic foot thus obtained are merely a "by-product" of the calculation. What required is the amount of void space between the sand particles. To measure the space is now the problem, and it can be done by filling the void spaces with water and noting how much water is required to fill the spaces or voids. It is for this purpose that 10 centimeters is the amount selected for use. The problem may be solved by any known bulk, by using the cubic inch, or any other quantity. But as 10 c.c. decimally interchanges with 10 grams of water, that quantity was selected for use in all sand-void calculations.

To measure the voids, it is only necessary to make

a mark on the side of one of the test tubes, say at *a*, Fig. 7; fill the tube with water to the mark, as shown at *e*, where a similar tube is thus filled, and then dump the measured 10 c.c. of sand into the tube as shown at *b*. The level of the water immediately rises from *a* to *c*, and the amount of water above mark *a* represents the amount of solid matter in the 10 c.c. of sand, while the space from the surface of the water at *c* to the mark *d* represents the voids in the 10 c.c. of sand.

For convenience the mark *a* is made at the surface of the water when there are 20 cubic centimeters of liquid in the tube. The mark *d* would be reached by the water were there no voids in the sand, or if 30 c.c. of volume had been placed in the tube. If a piece of glass rod, or some other impervious body having a volume of exactly 10 c.c. be placed in the liquid up to mark *a*, the liquid will rise exactly to mark *d*. But as the sand placed in the tube at *b* contained voids, the solid portion of the sand could only raise the water level to *c*. Thus the volume from *a* to *c* represents the volume of the sand, while the volume from *c* to *d* represents the volume of the voids in the sand.

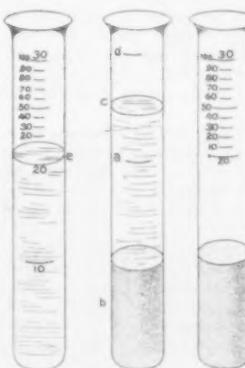


Fig. 7.  
Measuring Voids.

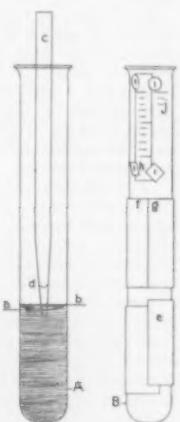


Fig. 8.  
Marking Test Tubes.

To determine the percentage of solid and void, the water between marks *a* and *c*, Fig. 7, must be weighed or measured. To do this weighing, carefully draw off all the water above mark *a* and place the liquid in the pan of the weighing scale and weigh in grams. By actual trial, the water thus removed is found to weigh 5.5 grams, or  $55/100$  of the weight of water required to fill the tube from mark *a* to mark *d*. Thus the solid in the 10 c.c. of sand is 55 per cent of its bulk, and the voids in that sand are 100-55=45 per cent.

But we have been working with the 10 c.c. of loose sand. There was removed 2 grams of sand before it was returned to the gauge after weighing out the shaken-down sand. Adding the 2 grams of sand to the tube the water again rises slightly above mark *a*, and the amount is very carefully removed and added to the water in the scale pan, which, after the addition, is found to weigh 6.4 grams, thus making the solid sand 64 per cent and the voids in the shaken-down sand 36 per cent.

There is another way of ascertaining the voids—that of measuring, instead of weighing the water between *c* and *d*. If the distance between *a* and *d* be graduated into 100 parts, it is evident that the percentage of sand and void may be read direct, without placing the excess of water in the scale pan. A method of doing this is shown on tubes *e* and *f*, Fig. 7. The mark at *e* is at the 20-centimeter line, and is so marked by scratching the glass with the corner of a file, or with a diamond. The distance from the 20 to the 30 c.c. mark is divided as shown and marked on the glass.

To obtain the marks *a*, *c* and 20, weigh the tube accurately on the scale, then add water to the tube until its weight is increased exactly 20 grams. The mark at 30 will require the addition of 10 grams more water to each tube. Do not try to pour the same water from one tube to another, for some of the water remains adhering to the sides of the first tube and the marking thus done will not be accurate. Pour over the same water, if desired, but weigh it, and add an amount sufficient to make up for that remaining in the first tube.

A method of measuring voids without the use of the density gauge may prove convenient in some cases, and it can be readily accomplished by the use of two tubes, as shown by Fig. 7. A portion of the sand to be tested is poured into a tube until it is filled exactly to the 10 c.c. mark *f*. The shaken test may be meas-

ured first, then some of the sand removed and carefully placed one side, while the loose bulk test is made in the same tube. The graduated tube is previously filled with water (the writer keeps the temperature at 60 degrees Fahr. while making void tests) to the 20 c.c. mark, then the sand in tube *f* is poured into tube *e*, and the distance which the water rises in the tube is read directly in per cent of solid and void from the graduated scale scratched upon the test tube.

Tubes may be purchased with the necessary graduations marked upon them, but such work is always special and is very costly. Tubes may be easily graduated and marked as required, and the following paragraphs tell how to do it.

#### GRADUATING AND MARKING TEST TUBES.

Place a tube upright on the pan of a weighing scale and balance the weight of the tube. A wire clip may well be permanently attached to the scale for supporting test tubes in a vertical position, and this matter will be discussed in the remarks upon making the weighing scale. Add 10 grams to the weight which balanced the test tube, and pour water into the tube until it exactly balances the added weight.

An excellent method of adding or removing the minute portions of water necessary to secure an accurate weighing of the tube and its contents within .01 gram is shown by sketch A, Fig. 8. The tube is represented as held vertically upon the scale pan and filled with water up to the line *b*. To add or remove a little water use the pipette *c*, which may be made by heating one end of a bit of  $\frac{1}{4}$ " glass tubing, then grasp the heated end with a pair of pincers, and pull straight away, drawing the tube down to a fine, straight point, which may be marked with a file and broken off about  $1/32$ " in diameter.

Place the end of the pipette in the water as shown, and the liquid will rise in the tube by capillary attraction, as shown at *d*. If the tube be dipped deeper in the water, a larger portion will flow inside the tube, and by placing the thumb over the open end of the tube it may be removed, carrying the contained water with it. By removing the thumb momentarily some of the water will drop back into the tube, and in this manner the amount of water, either to weight or to a mark on the tube, may be adjusted to any desired degree of exactness.

After 10 grams of water, at 60 degrees Fahr., have been placed in the test tube, a mark must be made exactly level with the surface of the water in the tube. Water inside of a clear tube sucks up around the edges of a tube, due to capillary attraction, as shown at *a* and *b*, Fig. 8, and the smaller the diameter of the tube the higher the water will rise, as at *d*. In marking tubes, or in reading to marks, the choice of two methods is open. Either the reading may be made to the upper portion, or rim of the concave surface, *b*, or it may be read to the lower portion, *a*, as desired. But whichever way the graduations are made, that way they should be read. There are arguments in favor of each method, and the worker must decide for himself. In all the work described in this article readings are made and taken from the upper edge, *b*.

Having placed 10 c.c. or grams of water in tube *A*, Fig. 8, the next step is to make a mark at *b*, exactly level with the top of the water. A file may be used in marking test tubes, as they are made of soft glass. A thin, flat file is best, one known as "half-round," with the teeth all ground off the flat side. A little file 3" long, with very fine teeth, is about right, though almost any kind of a file may be made to do the work, and a small three-cornered file, with one side ground smooth answers very well.

It will not do to put the thumbnail on the glass opposite the waterline and file against the thumbnail. Such methods are not accurate enough for this work. Wrap a bit of thin card or very thick paper around the tube, as shown at *e*, sketch B, just at the water line. It will not do to let the edges lie as shown at *e*, for one will be above, the other edge below, the water line. Adjust the edges until they coincide exactly, as at *f*, *g*, with the top edge of the card even with the water line entirely around the tube. To do this it is necessary that the tube be held exactly vertical, and that the edges of the card be matched fairly. Once the card is nicely adjusted, hold it tight and file a short mark or a long one as may be required. It is possible, by the card method, to put a mark entirely around the tube if required, but tubes thus marked are very apt to break short off along the mark. Short marks are the best;  $\frac{1}{4}$ " is enough for almost any graduation mark.

At *j*, sketch B, Fig. 8, a method is shown whereby a tube may be graduated to any desired scale. A piece of paper is first laid off to the required graduations, and is fastened to the tube by wafers, *i*, *i*, *i*. It is not well to paste the graduated paper to the tube as the moisture from the paste is apt to stretch the paper and cause error. Shellac may be used to

## ROCK PRODUCTS

fasten the paper. That substance will not stretch the paper, but the wafer method is the best, as it allows the paper to be adjusted to position with great exactness before applying the wafers. The card is used over the paper, to transfer the graduations from the paper, *h*, to the glass tube *j*.

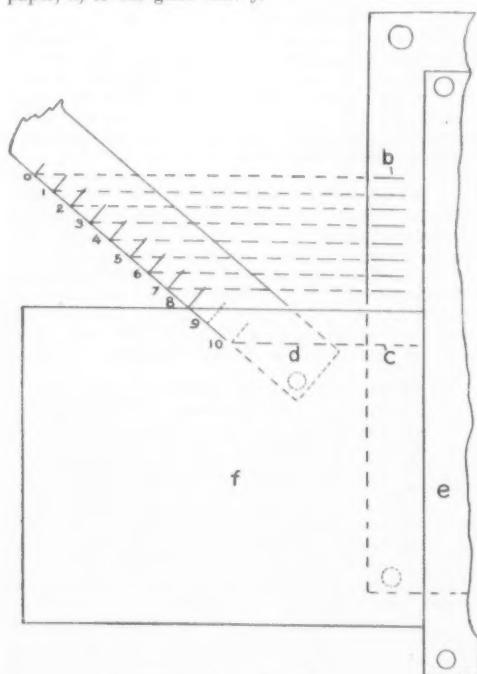


Fig. 9. Graduating a Scale.

A method of graduating the paper, *h*, Fig. 8, to any scale, with considerable accuracy, is shown by Fig. 9. The source of the graduations is the scale, *a*, *d*, which may be a piece of a carpenter's rule, a paper scale—the latter is preferable—or any other accurately ruled, equally spaced lines. It matters little what distance the lines are apart, and any desired scale may be worked up from it upon the paper *b*, *c*, which is made fast by a couple of tacks, adjacent to the wooden straight edge *e*, which is fastened firmly to the work table or block *f*.

The distance *b*, *c*, is to be laid off and marked to the exact length of the desired scale. For the test tubes the distance *b*, *c*, would be the height of 10 c.c. of water in the tube. The block *f* is made with straight sides and ends, and once a scale is started the block is used with the same sides against the work for that job. It does not matter whether or not the block *f* is square. With the block *f* in place against the straightedge *e*, draw the lines *b* and *c* a short distance across the table and then adjust to these lines the scale *a*, *d*, placing upon them the points 0 and 10, or any other desired extremes of a scale. With block *f*, lined in succession upon points 1, 2, 3, etc., the scale lines can be drawn on the paper *b*, *c*, with great exactness, ready for trimming, and for transfer to any surface to be marked.

#### GRADING FOR INCREASED DENSITY.

Having made or procured the apparatus above described, which, with exception of the weighing scale, is about all the appliances needed, a beginning may be made at increasing the weight of any sand by judicious grading. Take the No. 16 grade, for instance, which weighs from 102 to 105 pounds to the cubic foot when well shaken down. Put a certain quantity of No. 16 sand, say, 10 c.c., well shaken, in a test tube, and 10 c.c. of No. 20 (well shaken) in another test tube. Add a small quantity of the fine to the coarse sand and shake well; then see if the bulk of the mixture is increased. To a certain extent fine may be mixed with coarse sands without increasing their volume, and it is the purpose of the sand-lime man to determine how much of each grade may be added to the No. 16 without increasing the volume or ceasing to increase the weight to the cubic foot. When 10 c.c. of No. 16, weighing 16.5 grams, was mixed with 10 c.c. of No. 20, also weighing 16.5 grams, the resulting mixture measured 19.5 c.c., and of course weighed 33 grams. Then  $33 \div 19.5 = 1.69$ , the density of the mixture. The weight to the cubic foot of any of these mixtures is found by multiplying the weight of a cubic foot of water (62.5 pounds) by the density. Thus the weight of the mixture above is 105.8 pounds, against 103.2 pounds for the No. 16 and the No. 20 grades of sand.

Next, mix 10 c.c. of No. 16=16.5 grams, and 10 c.c. of No. 40 sand at 17.4 grams weight. The resulting

mixture (all these are measured well shaken down) was 18.8 c.c. at 33.9 grams, density 1.84, weight to the foot 115 pounds. All the computations in this article are made by the slide rule; hence there may be a slight unit difference from results obtained by arithmetical computations.

When 10 c.c. of No. 16=16.5, is mixed with 10 c.c. of No. 60 at 18.7, the resulting mixture will measure 18 c.c. and weigh 35.2 grams. The density will be 1.955, and the weight 122.4 pounds to the cubic foot. Another mixture was made of No. 16 and No. 60 by adding 10 c.c. of the latter in five quantities of 20 per cent each, the material being well shaken and measured after each addition of 10 per cent of No. 60. The results were as follows:

No. 16, 10 c.c., 16.5 grams, No. 60, 2 c.c., 3.74 grams = 11 c.c. at 20.24 grams, 1.864 = 116.6 lbs.

No. 16, 10 c.c., 16.5 grams, No. 60, 4 c.c., 7.48 grams = 12 c.c. at 23.94 grams, 1.995 = 124.6 lbs.

No. 16, 10 c.c., 16.5 grams, No. 60, 6 c.c., 11.22 grams = 14 c.c. at 27.72 grams, 1.98 = 123.6 lbs.

No. 16, 10 c.c., 16.5 grams, No. 60, 8 c.c., 14.96 grams = 16 c.c. at 31.46 grams, 1.966 = 122.9 lbs.

No. 16, 10 c.c., 16.5 grams, No. 60, 10 c.c., 18.7 grams = 18 c.c. at 35.20 grams, 1.955 = 122.4 lbs.

By inspecting the above table, it will be noted that nothing is gained after 4 centimeters or 4 per cent of fine sand has been added to the coarser material. In fact, the density constantly decreases by additions of fines after 4 per cent of the volume has been added. This is one of the things which the sand-lime man wants to know. His business depends upon such points, and the quicker he realizes it the better it is for the sand-lime business.

With endless patience all the grades of sand must be gone through, adding to the coarse that portion which will increase the density of the mixture and include coarse material for strength and lime-saving, and fines enough for good corners, well-closed sides and little absorption.

Could the mixture of grades noted above be improved by the addition of No. 100 or No. 200 grades? This is a question which will prove of great interest. Probably the addition of very fine grades should have commenced after 4 per cent of No. 60 had been added, but as the full amount had been added, we must make the best of the 122.4-pound mixture and test out the 4 per cent matter at some other time. To the mixture of 10 c.c. each of No. 16 and No. 60 there was added No. 120 (through No. 100) as follows, in lots of 2 c.c. each:

2 c.c. No. 120—18.5 c.c. = 39.04, density = 2.21. Weight, cubic foot, 132 pounds.

4 c.c. No. 120—20 c.c. = 42.88, density = 2.14. Weight, cubic foot, 133.4 pounds.

6 c.c. No. 120—21 c.c. = 46.72, density = 2.22. Weight, cubic foot, 139.1 pounds.

8 c.c. No. 120—23 c.c. = 50.56, density = 2.20. Weight, cubic foot, 137.5 pounds.

10 c.c. No. 120—25 c.c. = 54.40, density = 2.17. Weight, cubic foot, 136 pounds.

Voids, 22 per cent.

In the above there is a satisfactory and very gratifying increase in density up to 6 c.c. in 20 c.c. of coarser material. After that point is reached, it will be noted that the addition of No. 120 does not increase the weight to the cubic foot. In the mixture of 6 c.c. of No. 120 with 20 c.c. of coarser sand, it will be noted that the 6 c.c. of fine sand is almost exactly 25 per cent of the entire mixture.

When No. 200 sand is added (through No. 150 with all finer grades included) the density is as follows:

10 c.c. of No. 16 and 10 c.c. of No. 60 mixed = 20 c.c. at 35.2 grams.

2 c.c. No. 200—18 c.c. = 38.87, density = 2.16. Weight, cubic foot, 135 pounds.

4 c.c. No. 200—19 c.c. = 42.54, density = 2.24. Weight, cubic foot, 140 pounds.

6 c.c. No. 200—20.5 c.c. = 46.21, density = 2.25. Weight, cubic foot, 140.5 pounds.

8 c.c. No. 200—22 c.c. = 49.88, density = 2.26. Weight, cubic foot, 141.7 pounds.

10 c.c. No. 200—23.5 c.c. = 53.55, density = 2.28. Weight, cubic foot, 142.8 pounds.

Voids, 20 per cent.

The above showing proves conclusively that sand ground through 200 mesh is necessary for the making of first-class sand-lime bricks. Other things being equal, the substitution of No. 200 sand for No. 100, to the extent of 25 per cent of the entire quantity, increases the weight to the cubic foot from 136 to 142.8 pounds to the cubic foot, and decreases the voids from 22 per cent to 20 per cent.

It is evident that a most thorough and systematic testing of different grades and combinations of grades of sand must be made in order to ascertain the densest possible mixture to be made from any given sand. This will be done in later paragraphs, but the need of the weighing scale is great, and that appliance must be provided forthwith.

(To BE CONCLUDED.)

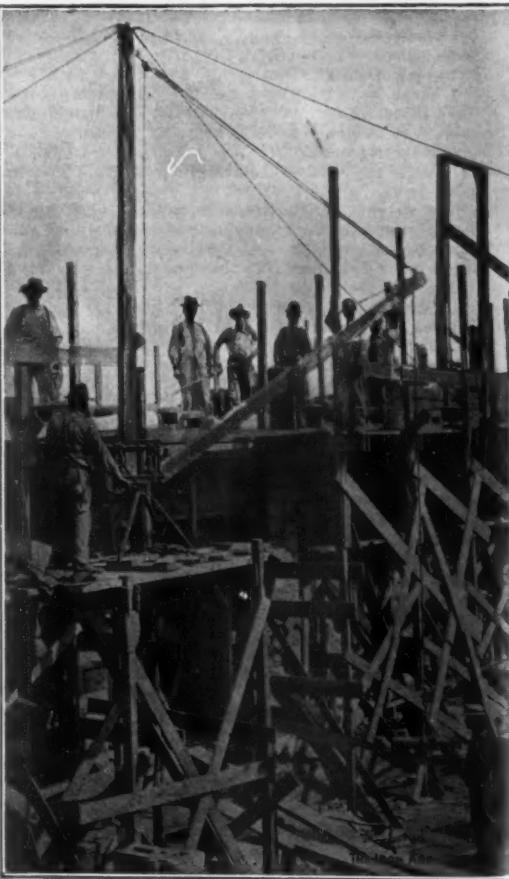


Those who have once used the classified columns of ROCK PRODUCTS are sure to come again. Try them if you want help or employment, or second-hand machinery, or if you have machinery for sale. ROCK PRODUCTS reaches the right people.

*Martin's Magazine*, devoted to the betterment of brick plants, is published on the 10th of each month by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., and is always full of valuable suggestions and hints of general interest as well as special information about their splendid line of clayworking machinery, cement mixers, elevators, conveyors, dry pans, crushers, barrows and trucks.

Iron oxide obtained from the ore is the principal pigment in brick, cement or mortar colors. However, in the same piece of ore there may be a dozen different grades of oxides, each of them apparently suited by appearance and texture to serve as a pigment, but only one or two of these will be chemically permanent under ordinary weather conditions. All the rest will quickly change in chemical composition and therefore in color, under the influence of light, air, heat and moisture. Ricketson's "Red Brick" brand mortar colors are made from the purest Lake Superior Bessemer ores, from which all but the absolutely stable oxides have been eliminated by a special process. It is for this reason that Ricketson's colors have such great strength and have shown no signs of cracking or fading in places where they have been exposed to the weather for over twenty years. Their great purity and the fineness to which they are ground makes them go farther and mix easier than the ordinary grades on the market.

The Parker Hoist and Machine Company, 971 North Francisco Avenue, Chicago, are manufacturing what many consider the handiest, most convenient, economical and up-to-date derrick upon the market. To this thousands of contractors, bridge builders, railway, mine and other large companies who have light



PARKER DERRICK AT WORK.

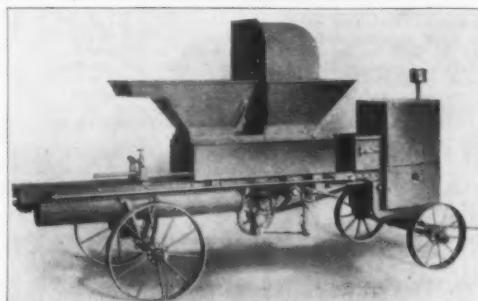
lifting to do are ready to testify. The Parker ranges in capacity from 1,500 to 4,000 pounds. The boom, or reach, varies from 12 to 30 feet. They can also be used to great advantage when mounted upon a small car or truck, which is sometimes furnished. The cut herewith illustrates one of the Parker No. 1 derricks handling concrete blocks used in erecting the power plant of the Pittsfield Electric Company, Pittsfield, Mass. One of the things that cuts most seriously into the profits of concrete-block construction is the handling of the blocks. A Parker derrick, such as the one here shown, will save its cost over and over.

Small investment—big results. Try the classified columns of ROCK PRODUCTS. They are read by everybody whom you want to reach. They bring the kind of replies that result in business.

Joseph T. Ryerson & Son, Chicago, have completed their new general offices and warehouses at Sixteenth and Rockwell Streets, and have discontinued their Milwaukee Avenue and Lake Street establishments. They will maintain downtown branch offices in the Commercial National Bank Building and have inaugurated an hourly automobile service between these offices and their immense new warehouse system and the general offices. The automobile leaves the corner of Adams and Clark Streets on the even hours, beginning at 8 o'clock each morning. The trip requires less than fifteen minutes by way of Jackson, Ashland and Twelfth Street Boulevards.

The accompanying cut shows a rope sheave of unusual dimensions which was recently completed by the H. W. Caldwell & Son Company, engineers, founders and machinists, at their plant on Western Avenue, between Seventeenth and Eighteenth Streets, Chicago. The sheave is 20 feet in diameter. It has twenty grooves for 2-inch rope and weighs finished, 48,000 pounds. It will be noticed from the illustration that the sheave has a double set of arms. The sheave was cast in one piece and was then split for convenience in handling and erecting. It was cast in the foundry of the Caldwell Company and finished on a 20-foot boring mill, as indicated by the illustration. It is intended for use in connection with the main drive in a refrigerating plant located in Mexico, the large sheave receiving power from an electric motor, the transmission being by means of what is generally known as the American or single-rope system. The Caldwell Company, which was established in 1875, makes a specialty of machinery for transmitting power and for elevating and conveying material in and about cement plants, rock-crushing plants, lime plants, plaster works, etc. Their New York office is in the Fulton Building, Hudson Terminal, No. 50 Church Street, and they have just opened a New England engineering and sales office at Room 337 Oliver Building, 141 Milk Street, Boston, Mass. This office is in charge of Mr. Malcolm R. White, mechanical engineer, who will give attention to inquiries from the New England States.

The accompanying cut shows the Kent continuous concrete mixer No. 2, manufactured by the Kent Machine Company, Kent, Ohio. For a portable outfit with power, for contractors' use on small jobs of concreting of any kind, this mixer is mounted together with an engine for operating it. The hoppers and the feeding, measuring, adjusting and mixing mechanisms are the same as in the No. 2 stationary mixer. The wheels and axles and the housing for the engine are all made of steel. The mixer is driven by a belt from the engine. An adjustable belt tightener of the idle pulley type is provided, and is adapted to be operated to start and stop the mixer, while the engine is in operation, by a shipper rod on the opposite side of the machine and extending back to the discharge end of the mixer, so that it is always within easy reach of the operator. A handpower tongue is provided for hauling and guiding. Thills, or a tongue, for horse-power hauling may be attached and are supplied at



KENT PORTABLE MIXER.

slight additional cost. The gasoline engine is of the vertical, four-cycle type, and furnishes ample power for operating the mixer at full capacity. This engine is water-cooled, but cannot be injured by freezing, and, like the mixer, it is simple, easily operated, reliable and durable. To protect it from dust, the engine is inclosed in a steel housing, having doors on three sides, so that every part of the engine is accessible. Two of the doors are fastened on the inside and the other is provided with a lock. The height from ground to top of hoppers is 51 inches. The wheels are 18 and 24 inches high, with 3-inch tires. Capacity, 30 yards of concrete per day. Shipping weight, 14,000 lbs.



BIG ROPE SHEAVE FROM H. W. CALDWELL &amp; SON CO.

## CLASSIFIED ADVERTISEMENTS

Advertisements will be inserted in this section at the following rates:

For one insertion ..... 25 cents a line  
For two insertions ..... 45 cents a line  
For three insertions ..... 60 cents a line

Eight words of ordinary length make one line.  
Heading counts as two lines.

No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copies of paper containing the advertisement.

### EMPLOYMENT WANTED

#### EXPERIENCED ROAD SALESMAN

wants position, city or traveling. Wall plaster, cement and brick supplies.

Address "G. 3." care ROCK PRODUCTS.

### MACHINERY FOR SALE

#### PRACTICALLY NEW.

For sale—1 rotary screen, 42"x12", complete with 3 rim spiders, 3 sets clamps. Shaft 2 11-16"x15". Two rigid pillow blocks, 2 11-16", used only a few times.

Address "C. 15." care ROCK PRODUCTS.

### GOOD AS NEW.

Wanted to sell, one Stedman disintegrator, No. 40, also one boiler, capacity ten tons per hour, with elevator, shafting, etc. Used about one week. Apply to James S. Duncan, Toledo, Ohio, or B. H. TAYLOR, Carnegie Bldg., Pittsburgh, Pa.

### FOR SALE.

20-ton overhead traveler, 38-foot span; electric power or rope drive. 135 feet track; strictly first-class. Also 20-ton stiff leg stone yard and quarry derrick, Scoville make. 50-foot boom; double engines on mast, revolves full circle either direction. Fine condition.

WILLIS SHAW, 171 La Salle St., Chicago.

### FIRST-CLASS AIR COMPRESSORS AND CONCRETE MIXERS.

2-24"x24 $\frac{1}{4}$ "x30" class A "Ingersoll," st. driven.  
1-22"x24"x14 $\frac{1}{2}$ "x22" comp. "Norwalk," st. driven.  
2-14"x14 $\frac{1}{4}$ "x18" class A "Ingersoll," st. driven.  
1-10"x10"x10" class F "Ingersoll," st. driven.  
1-8"x8"x8" class F "Ingersoll," st. driven.  
1-8"x8"x8" "Chicago Pneu. Tool Co.," st. driven.  
2-14"x12" "Knowles," belt driven.  
1-11"x10" "Rabell," belt driven.  
1-10"x10" class E "Ingersoll," belt driven.  
1-8"x8" "Stillwell, Bierce & Smith-Vaile," belt driven.

### CONCRETE MIXERS.

1-No. 3 with engine on wheels, "Ransome."  
1-No. 3 with engine and boiler on wheels, "McKelvey."  
1-11 cu. ft. with eng. on wheels, "Municipal Eng. Co."  
1-11 cu. ft. with eng. and elevator drum on skids, do.  
1-11 cu. ft. mixer only on skids, ditto.  
Also engines, boilers, pumps, derricks, etc.

L. F. SEYFERT'S SONS, INC., Philadelphia.

### CONCRETE MIXERS, ETC.

for sale. 100 concrete mixers, all makes; 500 block machines, all makes; 200 Kramer automatic tampers. Write for 120-page catalog.

UNITED CEMENT MACHINERY MFG. CO., Plain City, Ohio.

### ENGINES AND BOILERS FOR SALE.

Engines—Corliss, Automatic and Throttling, all sizes from 1 to 500 H. P.  
Boilers—Horizontal, Portable and Vertical, all sizes from 1 to 200 H. P.  
Pumps, Heaters, Tanks, Sawmill and General Machinery.

Write for our prices on your requirements.  
THE HANDLE MACHINERY CO., 1745 Powers St., Cincinnati, O.

### FOR SALE.

No. 9 Gates, Style K crusher (new).....	\$6,250
No. 5 Gates, Style K crusher.....	950
No. 3 Gates, Style D crusher.....	475
Standard gauge 5-ton locomotive crane.....	3,000
Mundy 6 $\frac{1}{2}$ "x12" double drum hoist.....	675
Mundy 6 $\frac{1}{2}$ "x10" double drum hoist.....	625
Lidgerwood No. 72 double drum hoist.....	800
Little Giant traction steam shovel.....	2,850
Bucyrus 65-ton steam shovel.....	5,000
Air compressors, drills, concrete mixers, cableways, cars, locomotives, rails, etc.	

WILLIS SHAW, 171 La Salle St., Chicago.

### COMPRESSOR, DRILL, ETC.

One 25-ft. McKiernan compressor.  
Two 3 $\frac{1}{2}$ " McKiernan drills.  
One No. 4 Austin crusher with elevator, boiler and engine.

EDWARD HELY, Cape Girardeau, Mo.

### CRUSHER FOR SALE.

Gates No. 4 Gyratory, in fine condition. Cheap.  
R. P., BOX 2, Sta. A., Cincinnati, O.

### BRADY BLOCK MACHINE

for sale. It makes blocks, sills and caps up to five feet long, any thickness. Used only one season; at half price; also a continuous mixer. Little Giant, used on two jobs only.

A. J. WHITE, Big Rapids, Mich.

### MACHINERY FOR SALE.

One 25 H. P. horizontal tubular, fire box, Atlas boiler.  
One stone or gravel elevator.  
One D-24 Sergeant drill.  
One 36-inch Sturtevant exhaust fan.  
One set Derricks Irons.  
One set 2 $\frac{1}{4}$ " inch square, loose collar steel wagon axles.  
One spring switch complete for 16-pound rail.  
Two dump cars, 30-inch gauge.  
Two revolving stone screens.

Address THE STATLER STONE CO., Piqua, Ohio.

### GOOD AS NEW.

For sale Ruggles Coles rotary dryer in first-class condition. Has been in use only one month. Will be sold cheap to quick buyer.

THE NAIRN LINOLEUM CO., Box 32, Newark, N. J.

## ROCK PRODUCTS

## MACHINERY WANTED

## SECOND-HAND ROLLS

wanted: Buchanan or Sturtevant preferred. Name best price and location. L. F. SEYFERT'S SONS, INC., Philadelphia, Pa.

## MACHINERY WANTED.

One set of chain blocks of about 2 tons capacity. One single drum friction belt hoist of 5 to 10 tons capacity. Address THE STATLER STONE CO., Piqua, Ohio.

## PLANT FOR SALE

## VALUABLE GYPSUM PROPERTY

for sale. For particulars apply to WM. F. MORRIS, 737 Marquette Bldg., Chicago, Ill.



## BERKSHIRE WHITE PORTLAND CEMENT COMPANY

21 Park Row, New York City

ABSOLUTELY TRUE PORTLAND, PURE WHITE

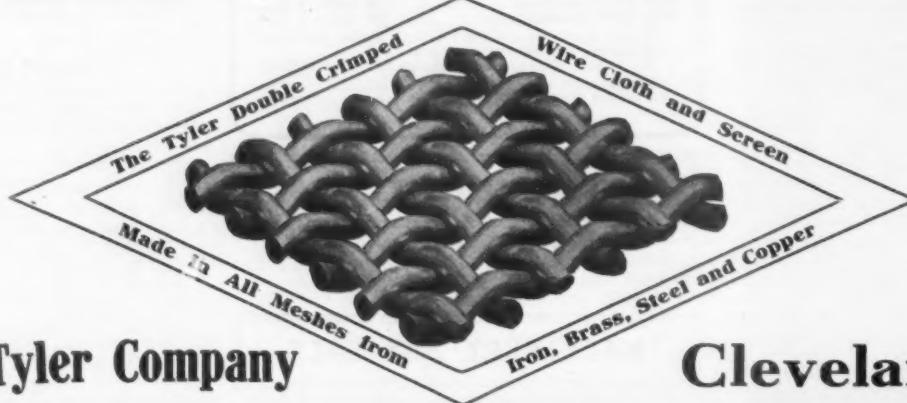
Over 700,000 Square feet floors laid with Berkshire "Snow White" Portland Cement. Specified in all work where QUALITY is essential



Born White

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The Tyler Screen is especially recommended for screening stone, sand, gravel, cement, lime, etc. It will stand extraordinary wear.



If you wish some clear, concise data on screens and their uses, send for catalogue "R. P." today.

Tell 'em you saw it in ROCK PRODUCTS.

## STONE QUARRY PROPERTY

for sale, and two stone crushing plants, complete and in good working order. Also lime kiln with daily capacity of 150 bushels. This property is situated at St. Mary's, Ontario, Canada. Ready sale for product. A good, profitable business in sight. It affords a splendid investment for an enterprising man or company. The quantity of suitable stone on property and in vicinity practically unlimited. For further particulars apply to the undersigned, LONDON & WESTERN TRUSTS CO., London, Ontario.

## A BARGAIN.

Stone crushing plant in first class order, eight car per day capacity. One new Climax crusher and one run less than six months. Situated on B. & M. road. Contracts for all that can be crushed up to September 1. Will be sold very cheap on account of the owner's health.

JOHN C. FULLER,  
P. O. Box 103, Stillwater, N. Y.

## FINE BRICK PLANT.

Sand-Lime-Brick plant in city of two hundred thousand population. Well equipped, machinery as good as new. Reason for selling, lack of capital for carrying on business properly. For particulars

Address "C. 18," care ROCK PRODUCTS.

## SEVERAL CRUSHING PLANTS,

machinery in fine condition, comprising the following:

No. 6, No. 5 and No. 3 "Gates" gyratory crushers.

1 No. 3 "McCullly" gyratory crusher.

1 No. 5 "Champion" road jaw crusher.

3 9"x15" "Blake" jaw crusher.

Also engines and boilers suitable for operating the above.

L. F. SEYFERT'S SONS, INC., Philadelphia, Pa.

## QUARRY FOR SALE

with crushers, bins, teams and complete equipment for hauling crushed and building stone. Only local quarry furnishing for the market of a thriving city of 18,000 inhabitants. Always plenty of orders and business increasing. Will bear fullest investigation. Reasons for selling, owners have other interests and cannot give this their attention. For particulars address

C. F. SMITH STONE & BRICK CO.,  
Appleton, Wis.

## FORECLOSURE SALE.

The plant of the Continental Cement Company of Casadaga, N. Y., will be sold at foreclosure sale at the office of John L. Hurlburt, Dunkirk, N. Y., at 10 o'clock July 2.

H. L. CUMMINGS, Trustee,

Frederica, N. Y.

## PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILINGS

### Patent Soapstone Mortar

Prepared in any Color for Laying Pressed and Enamelled Brick, Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING  
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO  
DODGE, Proprietor. CHESTER DEPOT, VT

## S A N D

HAVING completed our new plant we are now prepared to ship cleaned and dried sand especially adapted for foundry use and concrete work.

No order too large for us.

Illinois Valley Sand Co.  
OTTAWA, ILL.

## WASHED AND SCREENED

# WHITE Silica S A N D

JUST the right thing for molding artistic concrete work of all kinds. Pure silica as white as snow that will produce a white product for ornamental exterior and interior concrete finish. The perfectly practical facing material that has never been obtainable before. Quantity unlimited, price reasonable.

SHIPPING FACILITIES UNSURPASSED.

Ballou's White Sand Company  
Box 8, Millington, Illinois

## TWENTY LONG YEARS

so time and weather tried out Ricketson's famous "Red Brick" Brand.

## COLOR

for Mortar, Brick, Cement, Stone, etc., and proved it to be absolutely permanent. Red, Brown, Buff, Purple and Black.

Ricketson Mineral Paint Works  
MILWAUKEE, WISCONSIN



## Red, Brown, Buff and Black



## MORTAR COLORS

The Strongest and Most Economical in the Market.



Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO.

Chattanooga, Tennessee.

## Farrington Expansion Bolts



The most secure fastening in concrete as well as in stone. Send for Samples.  
H. Farrington, 45 Broadway, New York

W. D. MEYER,  
MANUFACTURER OF  
Marble White Lime  
115 Delaware Street, QUINCY, ILL.

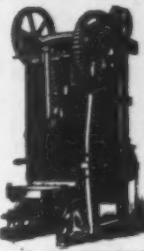
Peirce  
City  
White  
Lime



## Clay Working Machinery

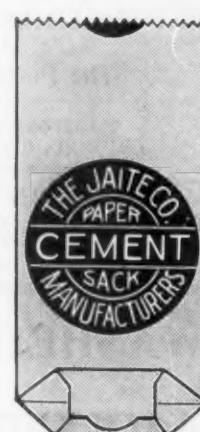
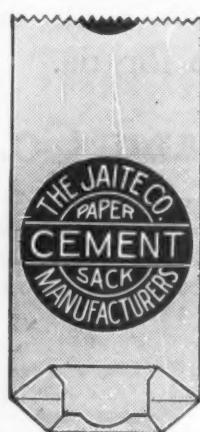
Yard Supplies of all Kinds

CEMENT MIXERS  
ELEVATORS  
CONVEYORS  
DRY PANS  
CRUSHERS  
BARROWS AND TRUCKS  
Steam or Animal Power Brick Machinery



"MARTIN"  
BRAVER Bldg  
LANCASTER, PA.

It will pay you to use  
**The JAITE PAPER SACKS**  
 FOR  
**Cement, Lime and Plaster**  
 EMBODY  
**Strength and Flexibility**



DO NOT BECOME HARD AND BRITTLE---AS THEY ARE MADE  
 RIGHT FROM START TO FINISH

Have that **LEATHERY FEEL** which makes it easy to tie.

We solicit your orders, knowing that once a customer, always a customer.

**THE JAITE COMPANY**  
 BOSTON, SUMMIT COUNTY, OHIO

# Amatite

B ROOFING



This advertisement will bring to your attention the *best and cheapest ready roofing* on the market. Here is how we prove it the best.

In the first place Amatite is made in one standard thickness, whereas other ready roofings range from a thin, flimsy half-ply to a three-ply thickness.

The three-ply thickness (which by the way is only one sheet of felt) is the only kind that can be compared with Amatite.

But right here is the point. Amatite is better made, has better water-proofing material, and weighs more per square foot than the three-ply grade of other makes, and *costs much less*.

These facts make Amatite the most desirable roofing made.

But in addition to its superiority in material and manufacture, Amatite has one distinction which makes it stand out above all others. *It has a real mineral surface*.

It is hardly necessary to state the advantages of such a mineral surface, the freedom from painting or coating, the perfect protection against all kinds of weather, the great durability.

This mineral surface is embedded in a layer of Pitch, *the greatest known waterproofing material*. Beneath this in turn are two layers of the best grade of wool felt—cemented together by more Pitch, making the whole a roofing that is *absolutely waterproof*.

No other ready roofing can compare with this mineral surfaced, water-proof, weather-proof, durable roof. That's why we say—*Don't buy your roofing until you have seen Amatite*.

**Free Sample and Booklet**

Send for Free Booklet and Sample today. It will pay you to get acquainted with Amatite. Address nearest office.

**BARRETT MANUFACTURING COMPANY**

New York  
 Cincinnati  
 Pittsburgh

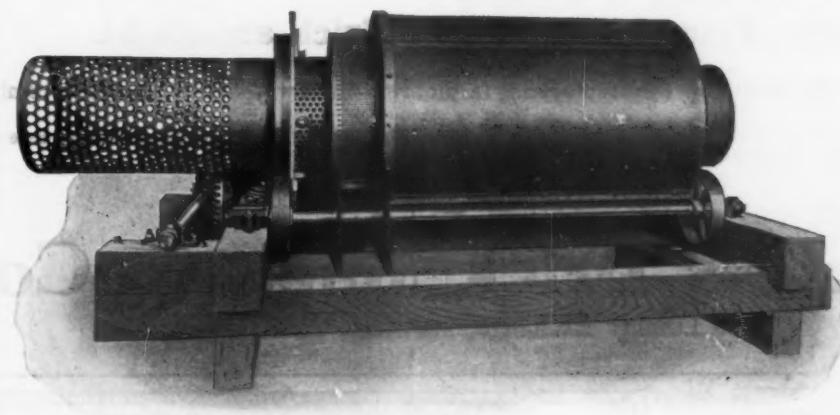
Chicago  
 Minneapolis  
 New Orleans

Philadelphia  
 Cleveland  
 Kansas City

Boston  
 St. Louis  
 London, Eng.

Tell 'em you saw it in **ROCK PRODUCTS**.

# JOHN O'LAUGHLIN'S SCREEN



For Granite, Limestone  
Gravel, Sand, Coal, Coke  
or Any Materials requiring Separation.

**JOHNSTON & CHAPMAN CO.**

offer the  
**JOHN O'LAUGHLIN SCREEN**  
of which they are Sole Manufacturers.

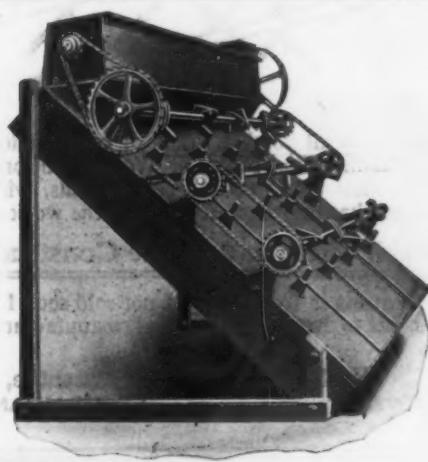
Our experience as manufacturers of Screens and Perforated Metal Screen Plates for the Sizing of all kinds of Crushed and Pulverized Material, has made us conversant with screening requirements of nearly every description. We endorse as much superior to old methods, the principle of the O'Laughlin Screen which reverses the usual process, discharging the coarse grades of material first so that the finer mesh screens are not worn by the coarser particles, and the wear of screen plates, and power required for the driving of screen machinery are enormously reduced. The Screen, (shown in the accompanying illustration) furnishes an equal and much more effective area of screening surface in much less space than necessary in the old system, and the number of sections can be made to suit the number of sizes of material wanted. These screens are in successful and profitable operation all over the United States. One of the first installed at Racine, Wis. has a capacity of over 2000 cu. yards or 2500 tons per day of ten hours, grades being 4", 2½", 1½", ½", and ¼". Compared with a set of old style screens of similar capacity, the repair bill per 100,000 cu. yards was found to be \$15.00 for the O'Laughlin against \$300.00 for the old style screens. We court investigation of the work of this screen. The fact is, that no one needing to size material in any quantity can afford to be without it. Estimates promptly furnished on request.

**JOHNSTON & CHAPMAN CO.,**

1333 to 1345  
Carroll Avenue

**Chicago, Illinois**

Perforators of all Sheet Metals, Flat, Cylindrical and Conical Perforated Screen Plates for Quarries, Mines, Reduction Works, Mills and all Industrial Purposes



## NEWAYGO SEPARATOR

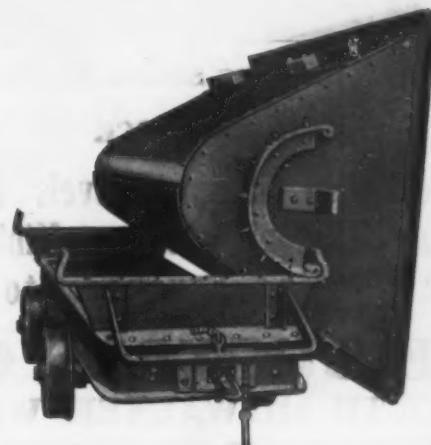
INCLINED VIBRATING SCREEN

THE ONLY SHAKING SCREEN  
THAT WILL NOT SHAKE  
ITSELF TO PIECES

SCREENS  
FROM  $\frac{1}{2}$  Inch TO 200 Mesh ACCURATELY

BEND FOR CATALOGUE

**STURTEVANT MILL CO.**  
105 Clayton St., BOSTON, MASS.



## Rocker Dump Car

For Quarries, Gravel  
Pits and Concrete Work

We manufacture CARS of all styles and sizes.  
Also ELEVATOR BUCKETS, ELEVATORS,  
REVOLVING SCREENS, HOISTS, SKIPS.

If you need any of the above write us for prices;  
we can quote you the lowest and give you what  
you want.

**H. B. Sackett Screen & Chute Co.**  
4212-4226 State Street, CHICAGO, ILL.



# Make Money

As others have already done it  
by making Cement Brick upon  
a Peerless Brick machine.

**The Price is Right. The Brick are Right.**

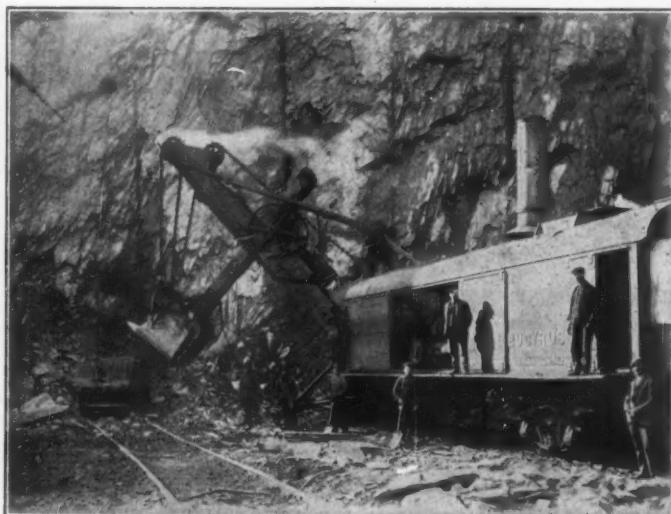
More Peerless Machines now in use producing a profit to the owners than all others combined.

The people who use the "Peerless" know its profit-making qualities. We will send you a list of the concerns who have already made money by doing business with us, if you wish.

WRITE FOR ILLUSTRATED CATALOGUE.

**Peerless Brick Machine Co.,**

100 Lumber Exchange, MINNEAPOLIS, MINN.



**95-B Bucyrus Steam Shovel**  
in  
**CEMENT ROCK**

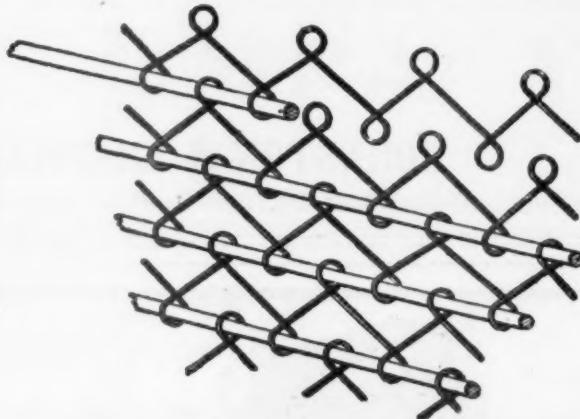
We Build Steam Shovels for  
Quarry Stripping, Cement Mining  
or Loading Crushed Stone

**THE BUCYRUS CO.**  
SOUTH MILWAUKEE, WIS.

**THE FULLER ENGINEERING CO.**  
DESIGNING AND CONSTRUCTING ENGINEERS  
ANALYTICAL CHEMISTS  
CEMENT MILLS A SPECIALTY  
OFFICES: ALLENTOWN NAT. BANK BLDG. ALLENTOWN, PA

Why do you advertise?  
To get business, certainly.  
**ROCK PRODUCTS** brings the business.

## Mankedick's Reinforced Concrete Structure



Adaptable to all possible forms of construction, such as Arches, Columns, Silos, Floors or Walls. Uniform strength in every position. Any desired size of rods, wire or mesh may be used that may be necessary for the work required.

### Rapid, Cheap and Simple Construction

This Patent is for sale. If not sold soon I will make arrangements to have the material manufactured for the market.

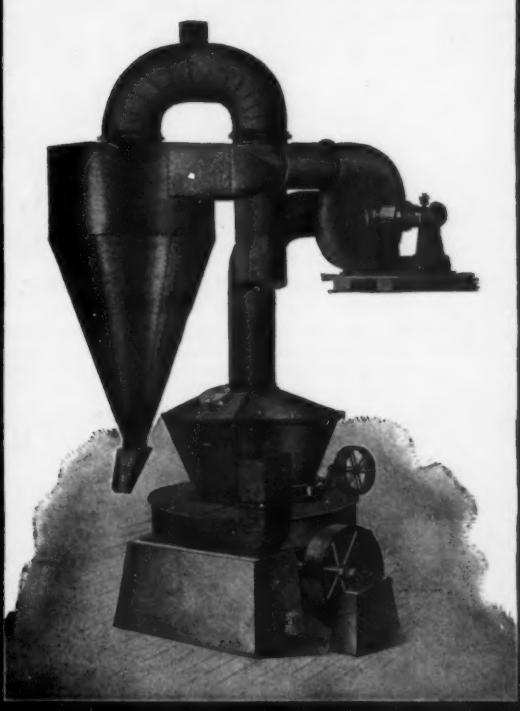
**CHAS. MANKEDICK, Patentee,**  
P. O. Box 397. **SULLIVAN, INDIANA**

# Plaster! Plaster!

**Iowa Hard Plaster Co.**

HARD BY NAME. HARD BY NATURE.  
HARD TO BEAT. NOT HARD TO GET.

**Iowa Hard Plaster Co.** FT. DODGE  
IOWA . . .



SAVING MONEY  
IN YOUR  
GRINDING ROOM

*Is not all that*



THE  
RAYMOND SYSTEM OF  
AIR SEPARATION  
WILL DO FOR YOU

In every case where this system has been installed it has proven itself an economy not only in the actual grinding and separating of materials reduced to powder but in saving money or improving the work of other departments of the factory. The reading of our book may surprise you as to what we can do for you.

That you have no fault to find with your present methods is no proof that there is not a better way. It will cost you nothing to read the book. Just ask us for it. The reading of it may mean thousands of dollars in your pocket.

USE THE COUPON  
RAYMOND BROTHERS IMPACT  
PULVERIZER CO.,  
141 Laflin St., CHICAGO

*SIGN THIS COUPON, TEAR OFF AND MAIL*  
RAYMOND  
BROTHERS  
IMPACT  
PULVERIZER  
CO.  
141 Laflin St.,  
Chicago  
Please send your book  
"MAKING AIR MAKE MONEY"  
Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_

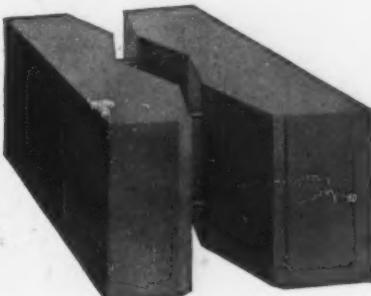
36

THE ANCHOR  
Continuous Air Space  
BLOCK MACHINE

This machine makes a block with a real air space that we guarantee frost and moisture proof.

Standard Anchor Machines make blocks that lay in the wall 8 in. by 24 in., and any width from 8 in. to 12 in.

Anchor Jr. Machines make blocks that lay in the wall 8 in. by 16 in., and any width from 8 in. to 12 in.



Write for new 1908 catalogue and special low prices.

**ANCHOR CONCRETE STONE COMPANY, Rock Rapids, Iowa**

Tell 'em you saw it in ROCK PRODUCTS.

BY THE TIME THIS ANNOUNCEMENT APPEARS  
WE WILL HAVE READY

## THE SIMPSON PORCH BOOK



Which is the most artistic and attractive literature ever issued concerning concrete block work. It contains 63 halftone engravings, including 30 showing beautiful porch columns, etc., in detail, and 24 showing factory yard displays and concrete porches (from photographs) in all sections of the country.

The Porch Book gives valuable ideas to builders and home owners of what is doing in porch decorations with concrete blocks made from

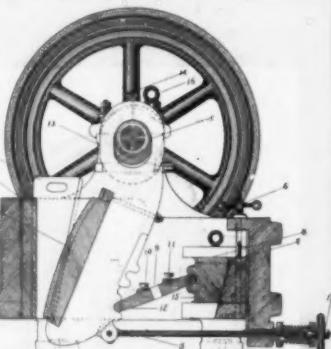
### The Finest and Largest Line of Molds in the World

We will send this book *free to block makers, contractors, builders, etc.*, if requests are made on their own letter heads or with business card enclosed. To all others we will mail it on receipt of 10 cents, stamps or coin. It costs us twice the sum.

**THE SIMPSON CEMENT MOLD CO.**  
498 N. High St., COLUMBUS, OHIO, U. S. A.

HERE is what you want to complete your plant so as to keep up with the other fellow. That is what we have had to do with our **X-L-All line of cement tools**

We have been adding from time to time and intend to add more. From the illustration you will note we are now manufacturing a crusher. We knew this had to come to complete the concrete business because there is so much waste in the gravel as it comes from the sand pit, and besides the concrete product requires these round stones to be broken up so as to give better bondage, than by using it as it comes from the sand pit. And besides with a crusher you use all the material, no waste. We can furnish you with a crusher from 5 ton to 150 ton per day. We also manufacture a full line of sand elevators and screens together with mixers, block machines, brick machines. In fact, almost anything for the concrete man. Send for catalog.

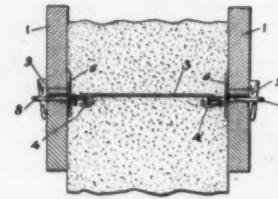


**Burrell Mfg. Co., Bradley, Ill.**  
102 GROVE STREET

## New Type of Wall Form

Investigate this new system; boards held firmly while concrete is being placed; easily and quickly removed; makes wall plumb and uniform in thickness.

SAVES { LUMBER  
LABOR  
TIME

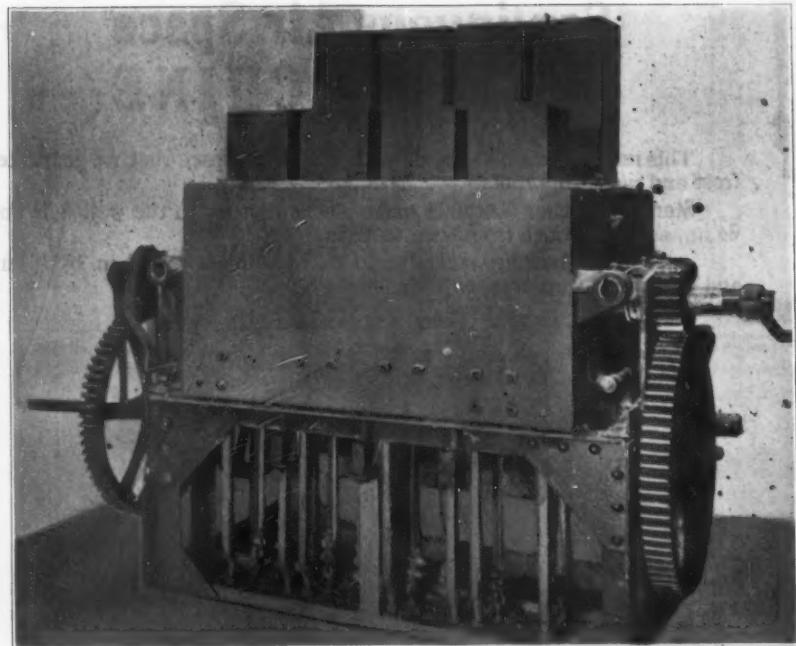


Write for circular explaining the system and the appliances:

**Charles Dietrichs,**

15 Kaufman Avenue,  
Little Ferry, New Jersey.

## FIREPROOF STRUCTURAL TILE OF CONCRETE



400 Tiles per Day With Three Men.

**CONCRETE STONE AND SAND CO.**

A. A. PAULY, INVENTOR.

Eminent Engineers and Architects indorse the Pauly System of Concrete Tiles and Pipes. Here is where dealers can get "all the profit."

### EXCLUSIVE TERRITORY SECURED TO INVESTORS.

Responsible parties investing in a plant for the manufacture of structural tile and sewer pipe by the Pauly patented system are fully protected in their immediate market with exclusive control of the machinery. Machines are all furnished upon a lease contract which is as strong as an insurance policy. Complete demonstration with every machine installed, using the local material that it is to work with. Positive guarantee with every machine installed and every equipment or no trade. Let us demonstrate with a sample of your aggregate material free.

### The Merit of the Material Speaks for Itself.

If you own a sand supply, crusher refuse or furnace slag is handy—investigate for factory propositions.

**Youngstown, Ohio**

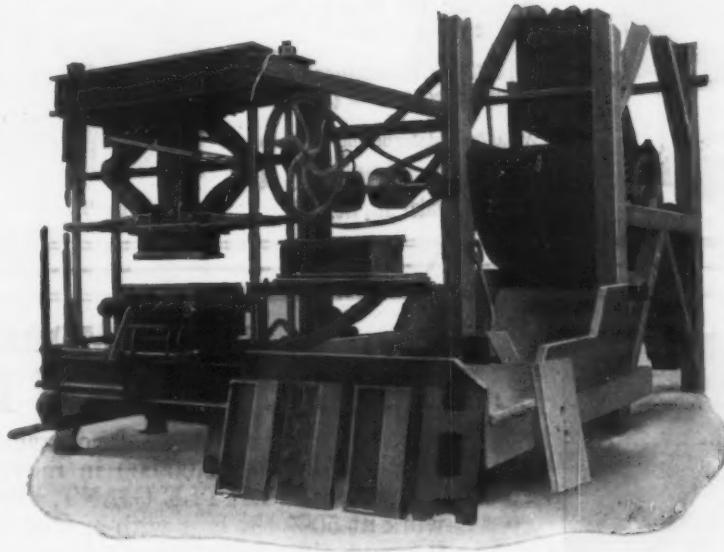
# PERFECTION AT LAST ATTAINED IN THE CONCRETE BLOCK INDUSTRY

THE PERFECTION POWER BLOCK MACHINE is the only Power Block Machine on the market, making a Hollow Concrete Building Block under Heavy Pressure and at Great Speed.

Machines have been in constant use since July 1st, 1905, with practically no expense for repairs.

The machine handles sand, gravel, crushed rock, slag and coloring materials perfectly.

All materials accurately measured, thoroughly mixed and uniformly pressed under 200,000 pounds pressure.



Makes 8, 9 and 12x8x24 inch blocks in five faces, and fractional and angle blocks.

Machine can be arranged to make Two Piece and Faced Blocks if desired.

All machines delivered, set up and put in operation to show a guaranteed capacity of 60 blocks (12x8x24 inch) per hour with 5 men.

Blocks perfectly cured in 24 hours in Vapor Curing Kilns of our own design.

Full details, catalog, testimonials, etc., sent upon request.

## THE PERFECTION BLOCK MACHINE CO. KASOTA BUILDING :: MINNEAPOLIS, MINN.

### PERFECTION IN BLOCK MAKING

If you wish to attain this you should combine these three important features:

#### Wet Process Face Down Damp Curing

The PETTYJOHN INVINCIBLE Machine does this, and is the only machine that does. Tandem Invincible makes two blocks at once. Price \$65.00 and up. Single Invincibles, \$35.00 and up. With our Triple Tier Racking System green blocks can be stacked three high direct from machine with inexpensive home-made rigging. Plans and blue prints free to customers. It economizes space, reduces off-bearing distance and above all insures slow, even, damp and perfect curing and bleaching.

Write for our latest edition of "Stone Making," a book of valuable data, just off the press—FREE.

#### THE PETTYJOHN COMPANY

614 North Sixth Street Terre Haute, Indiana



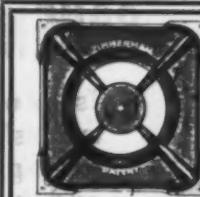
### Hoosier Cement Burial Vault Molds

All steel, no wood to shrink, swell and warp. Always ready, without repairs, and good for a lifetime. Best cement proposition known. 500 per cent profit. Telescopes and adjusts for making TWELVE sizes of cement vaults.

Makes vaults with circle corners, preventing cracks. Corners strongest portion of walls.

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**BALL & BROOKSHIER, Thorntown, Indiana**  
Patentees and Manufacturers. Ask for Circulars Nos. 9 and 10



Ask your architect to specify **The Zimmerman Patent Metal Base and Ventilator** to prevent your porch columns and floor from rotting. Send for circular A. Thousands in use.



**C. E. ZIMMERMAN, Syracuse, N. Y.**

### "The Svenson is Easily the Simplest and Fastest Mixer Ever Built"

Quit wasting money and making bad concrete with that "batch" machine. Don't fuss and lose time with complicated mixers. Let us tell you about this simple, strong machine.

#### The Svenson Concrete Mixer

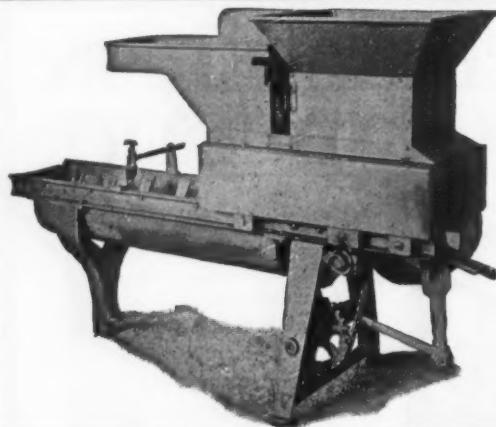
Has only five moving parts, all on one shaft. It keeps going and it keeps the men going.

We want to tell you our ideas on proper mixing, for the "Svenson" mixes dry, then wet—the only scientific way. And it proportions the mix positively, just the way you set it.

Send for Catalogue.

**Svenson-Shuman Machine Co.,**  
602 Bessmer Bldg., PITTSBURGH, PA.





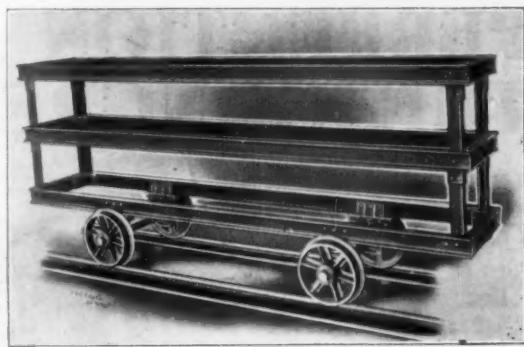
## "KENT" CONTINUOUS MIXER

"The Mixer that measures  
and Mixes"

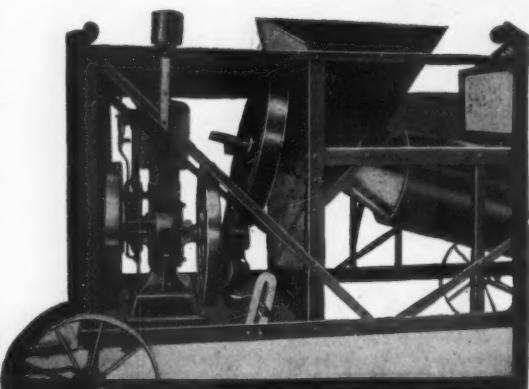
"You fill the Hopper, the  
Mixer does the rest"

Simple, reliable, economical, durable  
and moderate in price

Write for Catalogue and Prices to  
**The Kent Machine Co.**  
306 N. Water St., Kent, O.



The "KENT" Block Cars, Transfer Cars, etc.



## THE DEMOREST LITTLE GIANT MIXER

On a 5 mile sewer job the contractors estimated that they could save \$2,000.00 in moving expenses alone by using the LITTLE GIANT, besides putting in the work at 50% the cost with any other machine. Isn't it about time you "got wise" and saved some of the good dollars you are paying out. ONLY RESULTS count. CLAIMS of manufacturers amount to nothing.

WRITE FOR PRICES

**BALLOU MFG. CO.,** 35 High St., Belding, Mich.



## THE PERFECTION CONCRETE MIXER

Gives you a thorough mix, and in fact has all the merits that is possible to give a mixer. Catalog on request.

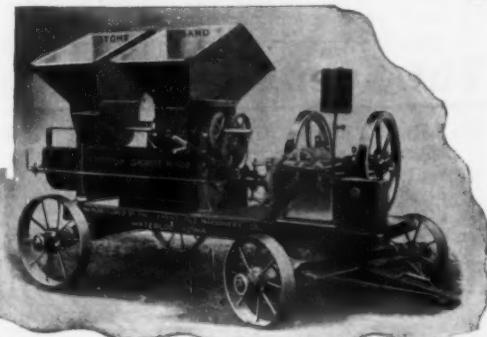
## THE CEMENT TILE MACHINERY CO.

The Largest Manufacturers of Cement Working Machinery in the World.

22 Roth Street

WATERLOO, IOWA, U. S. A.

Tell 'em you saw it in ROCK PRODUCTS



LET US HEAR FROM YOU.

## "IT PAYS TO INVEST" THE SCHENK CEMENT DRAIN TILE MACHINE

Is the opening wedge for a successful business, it pays you big interest, and profits and is a money-making proposition. Why not use the wedge?

Makes 3M to 4M 4", 5", 6", 7", 8", 10" and 12" tile in 10 hours with six men and a ten Horse Power engine. It also makes 14", 15" and 16" tile. "It's a wonder."



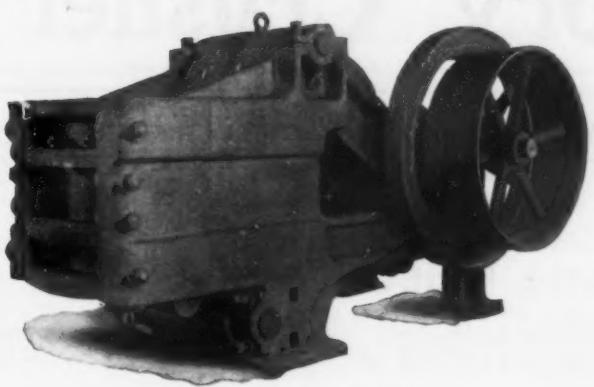
# ENTERPRISE PLASTER MIXER

NOISELESS,  
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and  
Retarder with Dry Plastering  
Materials.

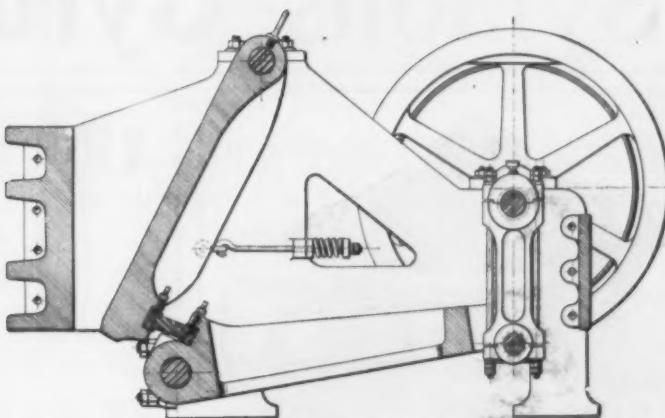
## Calcining Kettles

Jaw and Rotary Crushers for Gypsum, Reels,  
Vibratory Screens, Hair Pickers and Trans-  
mission for applying power.



EHRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.  
The jaw opening at inlet is 18x28 inches.

**The J. B. Ehrsam & Sons Mfg. Co.,**  
BUILDERS OF  
**COMPLETE EQUIPMENTS FOR PLASTER MILLS**  
**Enterprise, Kansas**

**FARREL ORE AND ROCK CRUSHER**

USED IN ALL PARTS OF THE WORLD—LARGE RECEIVING CAPACITY—SPECIALLY DESIGNED AND CONSTRUCTED FOR HARDEST KIND OF WORK

**COMPLETE CRUSHING PLANTS OUR SPECIALTY**

• SEND FOR CATALOGUE.

**EARLE C. BACON, ENGINEER.**

FARREL FOUNDRY & MACHINE CO. HAVEMEYER BUILDING, NEW YORK

**NEW SYSTEM OF SEWER CONSTRUCTION**



Steel Centers and Formers for building Concrete Culverts, Sewers and other similar structures in their permanent location.

By the use of these Molds, no lumber is required for forming.

The walls of the sewer are made uniform.

The back filling is carried on as the work progresses.

The centers and formers are easily set up and quickly removed when the concrete is set.

There is a saving of concrete.

They will save the contractor, time and money.

A full description will tell you all about them. Write for it. Address

**HICKSON'S  
Sewer Mold Co.,  
Mt. Gilead, Ohio**

GET THE BEST

**Finest Line of Gypsum Machinery**

MADE

**KETTLE CRUSHER NIPPERS**

ASK FOR CATALOG OF

**MOGUL NIPPERS. OPEN DOOR POT CRUSHERS**

Best Mills in the United States Have Them

**DES MOINES MFG. & SUPPLY CO., Des Moines, Iowa, U. S. A.**

**Symons Gyratory Crusher**



**UNQUALIFIED SUCCESS**

HALF THE HEIGHT  
GREATLY REDUCED WEIGHT  
GREATER CAPACITY  
GREATER DURABILITY

**SOLD ON ABSOLUTE GUARANTY**

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**Contractors' Supply and Equipment Company**

**Main Office: 305 Old Colony Building, Chicago**

**170 Broadway, New York**



## AUSTIN GYRATORY CRUSHER

The World's Leading Rock and Ore Breaker

The Only Automatically Lubricated Gyratory Crusher

8 Sizes—Capacities 40 to 2000 Tons.

Simple Construction (<sup>Saving</sup>  
Repairs)  
Economically Operated (<sup>Saving</sup>  
Expense)

Correct Design (<sup>Saving</sup>  
Power)  
Result: EFFECTIVE, DURABLE AND MAXIMUM  
CAPACITY.

Plans and Specifications Submitted for Any Size Plant.

Write for Catalogue.

**AUSTIN MANUFACTURING CO., Chicago**

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## Modern Grinding Machinery

KOMINUTERS for Granulating  
TUBEMILLS for Pulverizing

Davidsen Tubemill especially  
adapted for Sand-Lime  
Brick Work

Silex Linings for Tubemills  
Best Quality Dana Flint Pebbles  
Forged Steel Balls

**F. L. SMIDTH & CO.**  
ENGINEERS

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NEW YORK

## PULVERATORS

For the Pulverizing of Almost Any Material, Built in All  
Styles and Sizes. Best All Around Mill on the Market.



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Incorporated 1885 R. F. ABBE, Pres't Founded 1869

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WESTERN REPRESENTATIVE:  
MR. C. VAN DEVENTER, 706 & 707 First National Bank Bldg., Chicago, Ill.

## CRUSHERS

for soft rocks, burnt lime, etc.

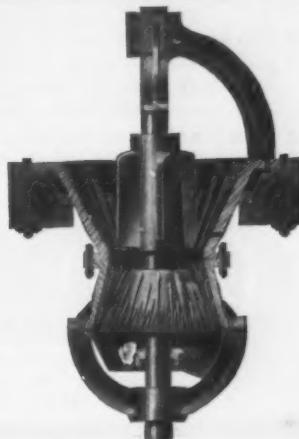
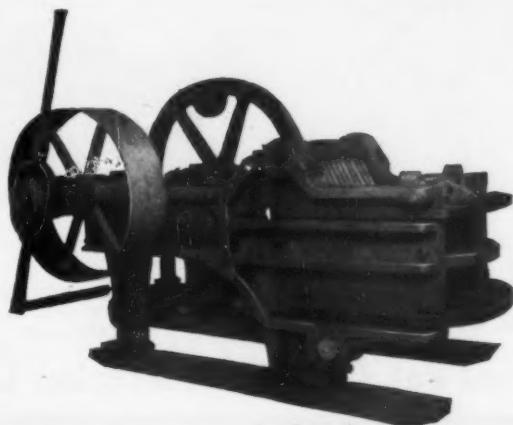
### GYPSUM MACHINERY

We design modern Plaster Mills and  
make all necessary Machinery, including  
Kettles, Nippers, Crackers, Buhrs,  
Screens, Elevators, Shafting, etc.

**SPECIAL CRUSHER-GRINDERS FOR LIME  
HYDRATORS**

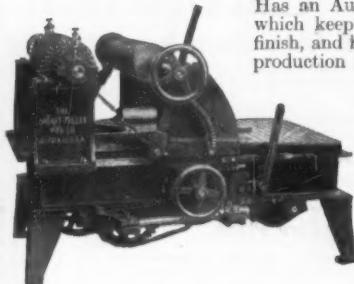
**BUTTERWORTH & LOWE**

17 Huron Street, GRAND RAPIDS, MICH.



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## The Leonard Wood Fibre Machine



Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines.

Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

**The Shuart-Fuller Mfg. Co.**  
ELYRIA, OHIO

THE SHUART-FULLER MFG. CO., ELYRIA, OHIO

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., CHATTANOOGA, TENN.

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FOR

## CALCINING GYPSUM

PLANTS IN  
OPERATION

Great Saving in Cost of Manufacture and Quality of  
Product Guaranteed.

The F. D. CUMMER & SON CO., CLEVELAND, O.

## SPECIAL MACHINERY AND FORMULAS

FOR THE MANUFACTURE OF

### WOOD FIBRE PLASTER, FIRE PROOFING AND KINDRED PRODUCTS

**The Ohio Fibre Machinery Co.**

### KING'S WINDSOR CEMENT FOR PLASTERING WALLS AND CEILINGS

Buffalo Branch, CHAS. C. CALKINS, Manager  
322 W. Genesee Street

J. W. VOGLESONG,  
GENERAL MANAGER

**Elyria, Ohio**

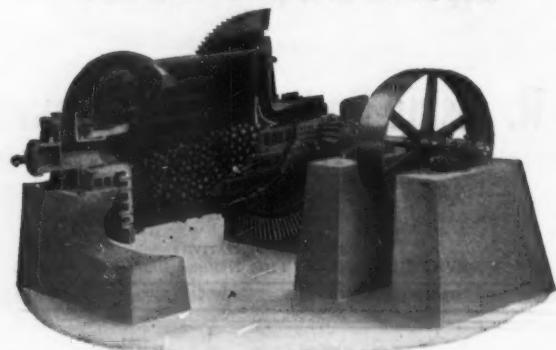
Elastic in its nature, can be applied with 25 per cent less labor and has 12½ per cent more covering capacity than any other similar material

**J. B. KING & CO., No. 1 Broadway, New York**

## Cement Mill Machinery

FOR EITHER WET OR DRY METHOD OF MANUFACTURE

CRUSHERS—DRYERS—KILNS—COOLERS  
TUBE MILLS—BALL TUBE MILLS, ETC.



Our Ball-Tube Mill shown above is a distinct innovation in the line of cement-making machinery, and is designed to entirely replace the old-time ball mill for the coarse grinding of cement clinker, because of its much greater grinding capacity per horse-power and the extremely low cost for repairs.

**NO SCREENS TO CLOG OR WEAR OUT  
THEREFORE NO SHUT-DOWNS**

Our entire line of Cement Mill Machinery is distinctive in character and design and is acknowledged by discerning engineers to be superior to any other on the market.

Our new Catalog No. 7 gives full and complete details. Send for it.

**POWER AND MINING  
MACHINERY COMPANY**

CUDAHY (Suburb of Milwaukee) WISCONSIN  
MEXICO CITY, CHICAGO, EL PASO, NEW YORK, SALT LAKE,  
SAN FRANCISCO.

## RAW MATERIAL GRINDERS

### New Williams Universal

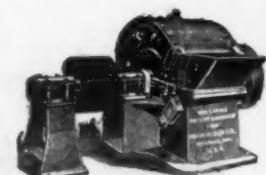
FOR TUBE MILL FEED  
800 BARRELS 22 HOURS  
95 PER CENT THROUGH 20 MESH  
HORSE POWER 40 TO 50  
WE ALSO GRIND  
GYPSUM, LIME, COAL AND SHALE



### Vulcanite Grinder

FOR ROLLER MILL FEED  
TAKES MATERIAL FROM  
GYRATORY, DIRECT

CAPACITY 20 TONS HOUR  
FINENESS  $\frac{1}{2}$  IN.,  $\frac{1}{4}$  IN. AND  $\frac{1}{8}$  IN.  
HORSE POWER 30 TO 35  
1,200 MILLS NOW IN USE



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CHICAGO

**The Williams Pat. Crusher & Pulverizer Co.**

**LET OUR POLICY**

of manufacturing a uniform and thoroughly reliable stucco

**I N S U R E**

you against producing an inferior wall plaster

**The Niagara Gypsum Company**

MANUFACTURERS OF

**Niagara  
Brand**

STUCCO
NEAT CEMENT PLASTER
WOOD FIBRE WALL PLASTER
SANDED WALL PLASTER
FINISHING PLASTER
PREPARED FINISH
SUPERFINE PLASTER

Our electrically equipped mines and mills are now in operation with a capacity of 300 tons per day and we assure you of prompt service.

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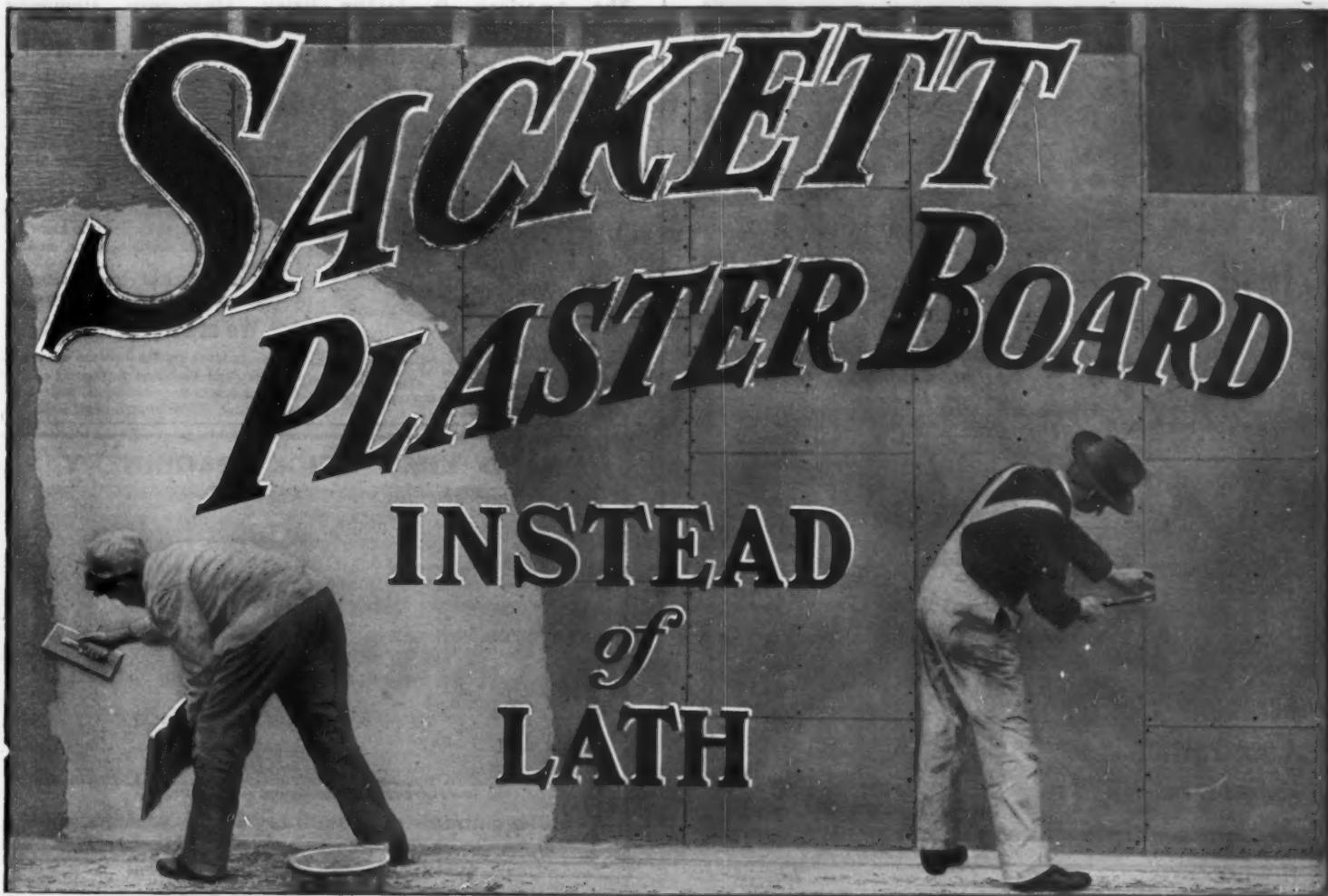
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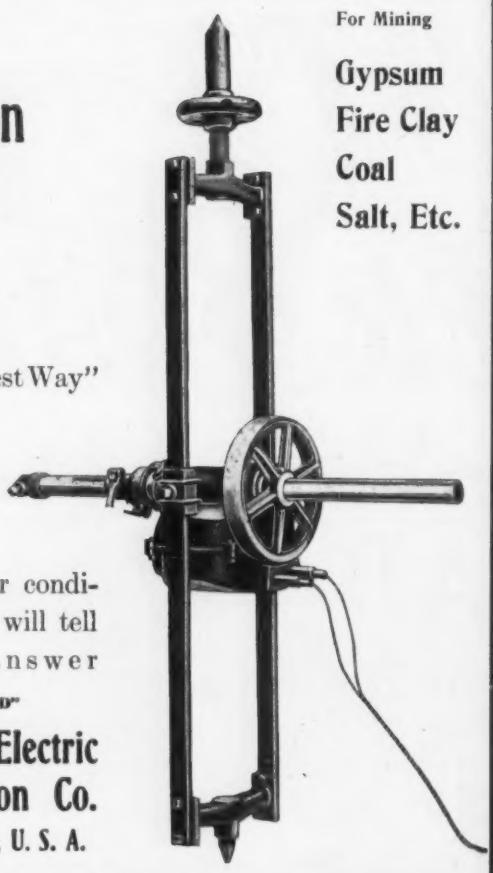
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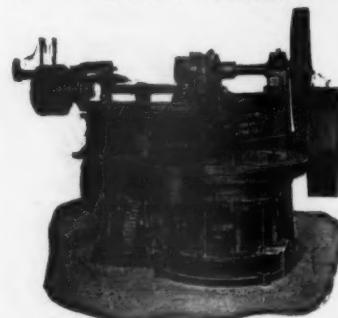
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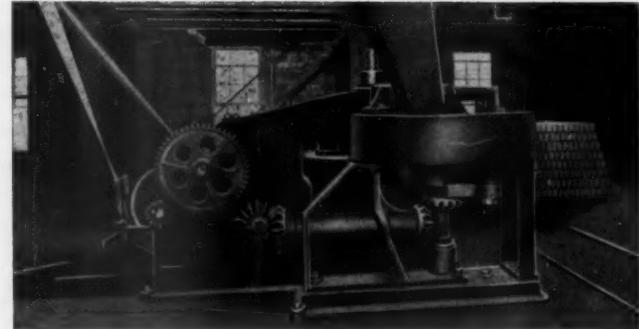
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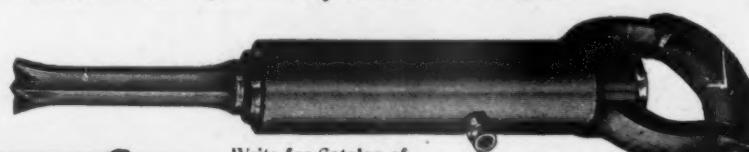
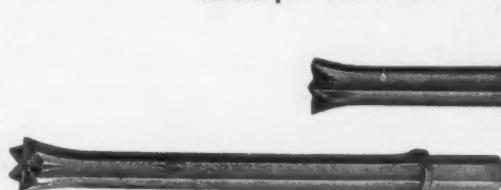


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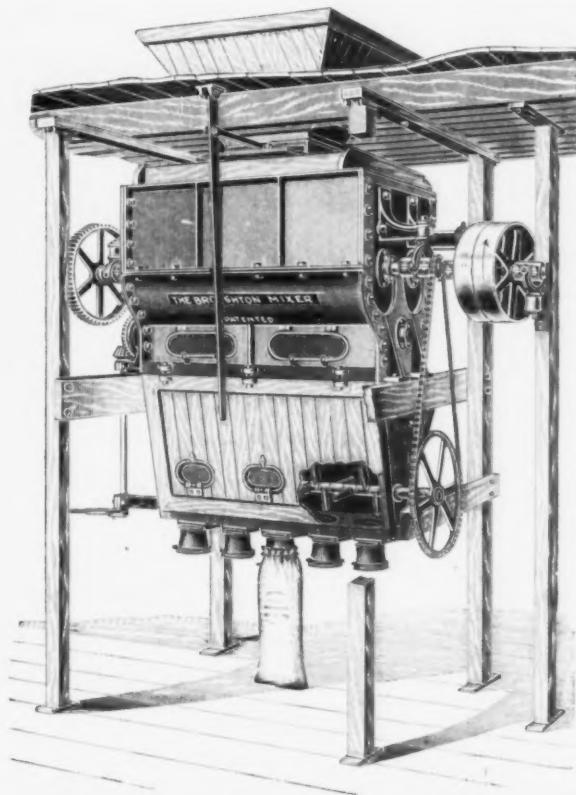
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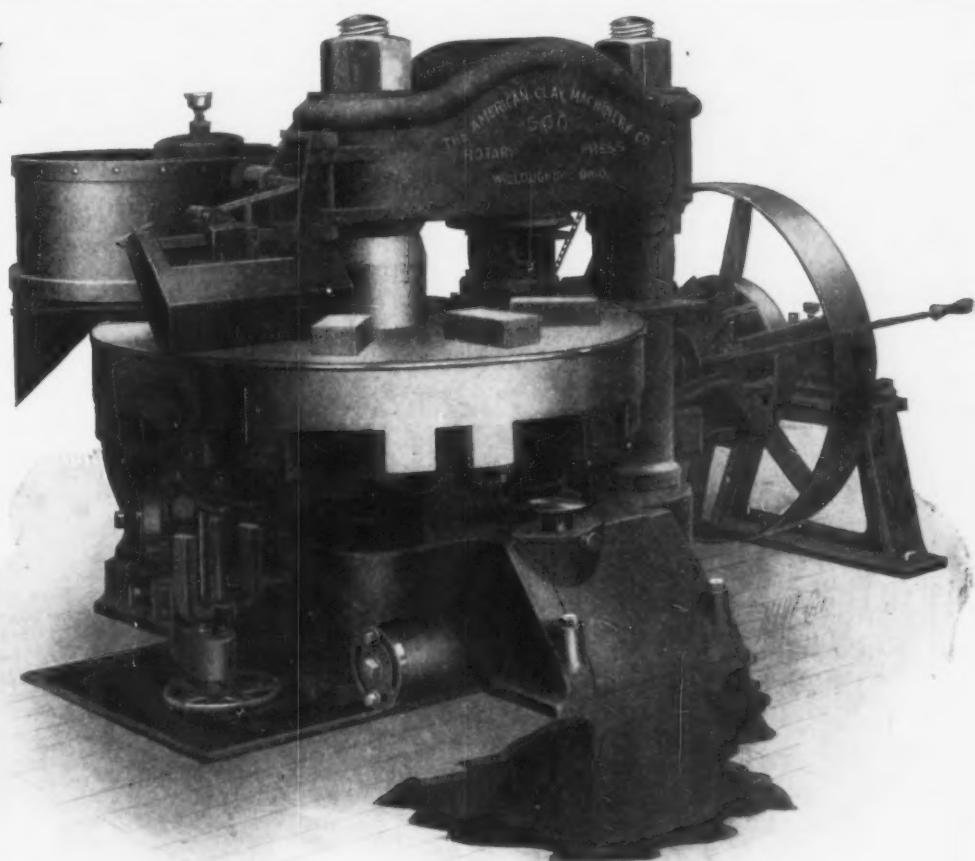
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